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Communist Interrogation and Indoctrination of
"Enemies of the State"

Lawrence E. Hinkle Jr. and Harold G. Wolf

Course of Exacerbations of Multiple Sclerosis in
Hospitalized Patients

John F. Kurtzke

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Speculative Trends in Electrophysiology

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*David Pearl, Harry Vander Kamp, Albert L. Olsen,
Paul D. Greenberg, and Stewart G. Armitage*

Habit-Forming Properties of Meprobamate

Frederick Lemere

AUGUST 1956

VOLUME 76

NUMBER 2

Comparison of Reserpine and Placebo in Treatment of
Psychiatric Outpatients

*James A. Meath, Theodore M. Feldberg, David Rosenthal,
and Jerome D. Frank*

Personal Stresses in Relation to Psychiatric Diagnosis
and Treatment

R. K. Freudenberg, V. M. Jenkins, and J. P. S. Robertson

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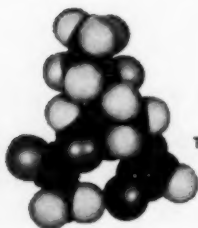
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Section on

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Communist Interrogation and Indoctrination of "Enemies of the States"

Analysis of Methods Used by the Communist State Police (A Special Report)

LAWRENCE E. HINKLE Jr., M.D.

and

HAROLD G. WOLFF, M.D., New York

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Submitted for publication May 31, 1956.

New York Hospital-Cornell Medical Center.

The information contained in this paper was assembled at a time when the authors were serving as consultants to the Department of Defense. The opinions expressed are those of the authors and do not necessarily represent those of the U. S. Government. The authors wish to acknowledge that the data upon which this report was based were accumulated through the selfless efforts of many able people, who must remain anonymous.

I. Introduction

THE COMMUNISTS are skilled in the extraction of information from prisoners and in making prisoners do their bidding. It has appeared that they can force men to confess to crimes which have not been committed, and then, apparently, to believe in the truth of their confessions and express sympathy and gratitude toward those who have imprisoned them. Many have found it hard to understand that the Communists do not possess new and remarkable techniques of psychological manipulation. Some have recalled the confessions of men such as Cardinal Mindszenty and William Oatis and the unusual behavior of the old Bolsheviks at the purge trials in the 1930's, and have seen an alarming parallel. These prisoners were men of intelligence, ability, and strength of character. They had every reason to oppose their captors. Their confessions were palpably untrue. Such behavior is, if anything, more difficult to explain than that of some of our prisoners of war in Korea.

The techniques used by the Communists have been the subject of speculation. A number of theories about them have been advanced, most of them suggesting that these techniques have been based upon some modification of the conditioned reflex techniques of I. P. Pavlov, the Russian neurophysiologist. The term "brain washing," originated by a reporter who interviewed Chinese refugees in Hong Kong, has caught the public fancy and has gained wide acceptance. Various authors have attempted to provide a scientific definition for this term. This has had the effect of confirming the general impression that "brain washing" is an esoteric technique for the manipulation of human behavior, designed by "scientific investigators" on the basis of laboratory experiments and controlled observations, and producing highly predictable results.

Many of the public speculations about "brain washing" are not supported by the available evidence. However, the Communists do make an orderly attempt to obtain information from their prisoners, and to convert their prisoners to forms of behavior and belief acceptable to their captors. They have had some success in their efforts, and this success has had a good deal of propaganda value for them. For this reason, if for no other, it is important that we have as clear an understanding as possible about how these methods originated, how they are applied, their effectiveness, and their purpose.

The information contained in this report was obtained from a number of sources. Details of the Communist arrest and interrogation systems, and a great deal of information about the purposes, attitudes, and training of those who administer them, were obtained from experts in the area, who for security reasons must remain anonymous.

Knowledge of the prisoners' reactions to their experiences was obtained by the direct observation of persons recently released from Communist prisons. Some of these observations continued for weeks and were supplemented by follow-up observations over periods of months. They included complete physical, neurological, and psychiatric examinations, and often psychological testing as well. They were supplemented by information supplied by families, friends, and former associates. Among those studied intensively were military and civilian prisoners of diverse ranks and backgrounds, women as well as men, defectors and resisters, persons "brain-washed" and "not brain-washed," some who admittedly cooperated with their captors and some who said they did not.

In supplement to this, pertinent information from investigations carried out

COMMUNIST INDOCTRINATION OF PRISONERS

by the U. S. Army and the U. S. Air Force and from the material assembled for the Defense Advisory Committee on Prisoners of War has been utilized. The very large public literature on these subjects has been reviewed also, and drawn upon when it was helpful. Finally, various laboratory and clinical investigations have been carried out in order to throw light upon the psychological and physiological processes involved in some of the interrogation and indoctrination procedures.

The evidence from every source has been consistent with that from the others and provides a basis for confidence in the validity of the statements which are made in this report and the conclusions which have been drawn from them, which may be summarized thus:

1. The interrogation methods used by the state police in Communist countries are elaborations and refinements of police practices, many of which were known and used before the Russian Communist Revolution.
2. The principles and practices used by the Communist state police in the development of suspects, the accumulation of evidence, and the carrying out of arrest, detention, interrogation, trial, and punishment are known. The effects of these upon prisoners are known also.
3. The "confessions" obtained by Communist state police are readily understandable as results of the methods used.
4. Communist methods of indoctrinating prisoners of war were developed by the Russians and subsequently refined by the Chinese. These methods and their effects are known also.
5. Chinese methods of dealing with political prisoners and "enemies of the state" were adapted from those of the Russians.
6. The intensive indoctrination of political prisoners is a practice primarily used by the Chinese Communists. The methods used in this indoctrination are known, and their effects are understandable.

Part II. Practices of the KGB

1. Background of the Russian State Police

It is illuminating to consider Communist behavior in the light of the doctrines espoused by those who are committed to Communism. Lenin and the other old Bolsheviks who established the Russian Communist Party had spent most of their lives as underground revolutionaries and terrorists, as prisoners, as exiles in Siberia, and as refugees and plotters in various parts of Europe. They accepted behavior which would have been called criminal had it not been carried out in the name of political reform. The unique contributions which they made to Communism were their willingness to use any means in order to attain Socialist ends, their insistence upon religious dedication to the Party, and their demand for unquestioned obedience to Party directives. Their chief concern was not with ideals, but with means of attaining power, ostensibly for the Party and "the people."

In the Byzantine Empire, from which the Russians received much of their cultural heritage, internal espionage and the arbitrary exercise of power by a bureaucracy reporting only to the Emperor were prominent features. As Russia developed from feudalism into a national state under Ivan the Terrible, a centralized, independent, and all-powerful bureaucracy was established, responsible only to the monarch. Subsequent Czars were perhaps less terrible than Ivan, but no less ruthless. The chancery of the Imperial Court was always independent and arbitrary, and the "rights of individual men" of all ranks never had the meaning in Russia which they had in Western Europe, even under absolute monarchs. In all of the period prior to 1917 the secret police system

in Russia was probably the most highly organized, effective, and powerful of that of any European state.

By the early decades of the present century, most of the features which characterized present-day secret police systems had already been evolved, and were exhibited by the Czarist Okhrana. The Okhrana at that time was nationwide, and centrally directed. It was empowered to make arrests and to punish arbitrarily without regard for other legal institutions. Its operations were secret; they were concealed from other arms of the government and the armed services, as well as from the general population. It operated through a great number of spies and informers, who were recruited by payment, threat, or compromise from among the general population, and especially from among criminals and those suspected of political activity against the state. Its apparatus extended even into the highest arms of all branches of the government; neither officials nor private citizens were immune from suspicion or arrest by it.

The Okhrana had learned to use many modern secret police procedures also. It had means of getting people to implicate themselves in criminal activity when there was a desire to compromise them or their associates. It shared with other police systems practices which had developed over a period of many years and which experience had shown to be effective in extracting information and confessions from persons suspected of crimes. These methods were known to police systems all over the world, and many of them are still in use at the present day.

Prisoners of the Okhrana were aware that they could be held indefinitely without trial, under very severe conditions of inadequate food, filth, lack of sanitation or exercise, and continuous interrogation. They knew that ultimately they might be banished or executed arbitrarily, if they did not die of other causes. All of this knowledge, and all of the pressures of their treatment, acted powerfully upon those who were exposed to it. It would be wrong to suppose that the Czarist police were either as effective or as thorough as those in modern Russia and other Communist states, but many of the practices used by these modern Communist police have been in use for many years and were well known long before the Communist Revolution.

Reform of the prison system was one of the foremost tenets of all of the prerevolutionary socialist parties, to which Bolsheviks subscribed no less than others. As far as the Bolsheviks were concerned, these reforms might be generally stated thus: The secret police apparatus was to be abolished outright, and those who had taken part in it were to be punished; the old prison system was to be abolished also. In the new state, the police would be the friends of the people and the guardian of their interests. Those who had committed crimes would not be tried before "arbitrary courts," with all the legal apparatus used in Western nations, for the courts in Western nations were thought of as arms of bourgeois tyranny, in which the wealthy secured justice and the poor injustice. Communist courts would dispense Communist justice. In the Communist state, the criminal would be detained in a place of detention. This would be not a prison but a place in which the accused could sit down with those who arrested him and discuss the crimes which he had committed and the reasons why he had committed them. No one would be arrested unless it was clear that he had committed a crime. If the prisoner would not admit his crimes, or if he were not aware that he had committed criminal acts, by persuasion and

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teaching he would be brought to understand the nature of his crimes and the reason why they were injurious to the interest of the people. Having come to understand his crimes, and the necessity for his punishment, the prisoner and the court might agree upon the type of punishment and reeducation which should be carried out. The prisoner would have an opportunity to make a written statement of his deposition, with a declaration that no force had been put upon him in order to obtain it. After the investigation of his case had been completed, he would be taken before the court, where he could explain his crimes, and his sentence would be passed. It was only after this sentencing that he would actually be put in prison. Nor would the new prisons be like the old. In them, the prisoner would be allowed to reform and rehabilitate himself by wholesome work and reeducation, instead of being incarcerated in a cell. Ultimately he would rejoin the socialist society as a "new man."

After the 1917 Revolution the Czarist secret police system was abolished. For a few months Russia operated without secret police. But when they were threatened by counter-revolution and chaos, it did not take the Communists long to turn to the idea of reestablishing a secret police system, this time controlled by the Communist Party. In November, 1917, Lenin established the "Cheka," or "Extraordinary Commission," for the suppression of counter-revolutionary activities, with the power of summary arrest, judgment, and execution. Under this euphemism the secret police system was reincarnated. At its head Lenin placed Felix Dzerzhinsky, a dedicated revolutionary, who gathered around him a group of zealous young Bolsheviks that were regarded as the cream of the Communist Party, the guardians of its principles and its power. It was long a proud boast among Communists when one said that he was "an old Chekist." But these men also shared a conspiratorial background, a willingness to use any means to attain their ends, and a freedom from "bourgeois morality."

The Chekists thought of themselves as members of a new order sweeping away the old, but what they inherited was the old Czarist prison system and all of the apparatus that went with it. They also inherited the concepts and attitudes of old Russia to a much greater degree than is generally realized, for these were the concepts and attitudes under which they and all other Russians had been reared. Just what proportion of the former personnel of the Okhrana and the old Russian prison system was utilized by the Cheka at the outset is not known; but it is a safe assumption that at the working level many of the police, the jailers, the spies, and the investigators used by the Cheka had been previously employed by its predecessor.* This is not to say that the Chekists did not set up their apparatus in accordance with Communist theory. It is characteristic of the Communists that they organize all of their institutions in a manner which is nominally in accordance with their theory. A rational and idealistic purpose is ascribed to every aspect of their actions. This is no less true of the police system than of any other segment of the Communist state.

Since that time the secret police system in Russia has passed through a number of reorganizations and has appeared under several names. The relation between the secret police system and the Ministry of Internal Affairs is confusing to those not intimately acquainted with the ramifications of the Soviet bureaucracy, for this Ministry also has been reorganized under a number of

*In this connection it is of interest that the Communist parties of Eastern Europe have absorbed many former Nazis and police operatives from the old regime into their new police system.

names, and from time to time the state police have been under its nominal jurisdiction. It is a popular custom to use the same initials to denote both the Ministry of Internal Affairs and the secret police system, but it is important to distinguish between the two. Since the purging of Beria, in 1953, the Ministry of Internal Affairs (MVD) and the State Police (KGB—Committee for State Security) have been administratively separate. In this report we shall refer to the Soviet State Police as the KGB. Where the terms Cheka, GPU, OGPU, NKVD, and MVD are used, it is understood that they refer to the state police functions of these former organizations, and not to their other functions, which were various.

There is a wealth of evidence that the methods of pressure, interrogation, and persuasion which are now used by state police throughout the Communist world had been developed in all of their essentials before the purge trials of 1936-1939. The differences between these methods and those which we can assume were inherited from the Okhrana in 1918 are chiefly improvements of organization and refinements of technique and the addition of the persuasive activities of the interrogator with his Communist logic. Tradition has it that these refinements were introduced by the Cheka. According to one report, Dzerzhinsky himself designed the methods of the Cheka, drawing upon his experience with the Polish police, as well as that of the Okhrana and the Bolshevik Party. Present-day KGB officers look upon the "ideological approach" and persuasive activities of the interrogator as the distinctive feature of the method of the KGB, and the one which is responsible for most of its effectiveness. Careful planning and the detailed organization of the arrest and interrogation procedures are important aspects of the KGB procedures, but are not unique.

The mass indoctrination of prisoners of war is a different matter. This appears to have been originated by the NKVD. At the outbreak of war between Germany and the Soviet Union, in 1941, the interrogation and subsequent internment of military prisoners was the function of the Red Army. Prior to 1943 the Russians took few German prisoners, and most of those who fell into their hands were murdered or otherwise disposed of by front-line military units. Very few Germans who were captured in 1941 and 1942 survived the war. This became a problem to the Soviet High Command, which was being deprived of the military information which might be obtained from prisoners-of-war interrogation. A directive was issued in the spring of 1942 to the effect that the lives of prisoners should be protected in order that the information which they possessed might be obtained from them. The custody of prisoners behind the area of combat was turned over to the NKVD in 1943. During the next two years this organization developed the methods of interrogating and indoctrinating prisoners of war which were subsequently adopted by the Chinese Communist Army and eventually, with many Chinese modifications, were used upon our military personnel in Korea.

Because the methods of the Russian state police became the model for those used in other Communist countries, they shall be considered in detail. At the time of writing (January, 1956) there are public reports that the Russian state police are in temporary eclipse, and their activities are said to have been restricted; but there is every reason to believe that this is only partially true. The reader should bear in mind that, in effect, some form of state police system has existed in Russia since the 17th century. From time to time public resent-

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ment has caused the organization having this function to be "reformed," or even "abolished," but it has always reappeared within a few years, often under a new name, but operating in the same manner. This has been true under the Communists no less than under the Czars.

2. Present Structure of the KGB

The KGB, like its predecessors, is directed from Moscow. Within Russia it is divided into sections, which correspond to the various federal republics, and subsections, corresponding to districts, or oblasts. Within each of these districts the organization has an investigation section, which is primarily concerned with the detection, arrest, and punishment of those who commit crimes against the state. The functions of this section are conducted primarily by a group of relatively junior officers in their late 20's or 30's, each of whom has been especially trained for this type of work. These men operate under the direction of superiors, who ultimately report to Moscow. It is the task of these junior KGB officers to become aware of any political crimes in the area assigned to them and to secure evidence leading to the arrest and punishment of the criminals. It is the task of other junior officers in the interrogation section to obtain a signed deposition from each prisoner confessing to his crimes.

In the following sections the various steps of the procedure used by the KGB will be outlined. The Communist principle which is the ostensible reason for using each step in the procedure will be discussed. This will be followed by a description of the procedure as it is actually carried out.

3. The Suspect

Those who fall under the suspicion of the KGB usually have some reason for exciting its suspicion. To the victim himself, such suspicion may appear to be capricious or arbitrary because he may be utterly unaware of the basis for it. The Russian definition of "crimes against the state," or political crimes, is a broad one, and the interpretation of these Russian laws is largely in the hands of the KGB; for all practical purposes, it may find reason to suspect anyone. From long practice this organization has developed the thesis that those who conspire against the state will fall into recognized categories. First of all, there are those members of the Communist Party who have come under suspicion by the Party apparatus, or who have been criticized for failure in some activity. Since "the Party can do no wrong," failure may become the equivalent of sabotage or treason. Second, there are those who have traveled abroad or who have had association with foreigners. This, of course, includes all foreigners; but it also includes former prisoners of war, Soviet functionaries who have served abroad, and even members of the KGB itself. Third, members of certain Soviet nationalities which are suspected of nationalist aspirations may also be suspected as a group. The Volga Germans and the Chichen-Ingush are examples. The most recent example was the suspicion cast upon all Jews during the period from 1950 to 1952, when complaints of "cosmopolitanism" were being made against this group. Fourth, certain segments of Soviet society, such as the "Kulaks" of the early 1930's or the Army in 1937-1939, may be suspect. Fifth, there are those whose class origin is considered bourgeois or aristocratic. These are fewer in number than they used to be, but they formerly constituted a large group of natural suspects. In times of unrest or mass hysteria, such as occurred during

the purge trials or during World War II, all persons in a category may become "suspects" and subject to arrest.

In addition to these "general suspects," there are "specific suspects," who become such either because suspicion has been cast upon them by one of the many informers among the general population or because they are relatives, friends, or former associates of other persons who have been arrested or are suspected. Other specific suspects are those who either intentionally or unintentionally have made statements, or carried out acts, which the police regard as evidence of criminal, antistate activity.

The following general assumptions can be made:

1. Although the suspect may not know why he is suspected, the KGB has some reason for singling him out.

2. Because of the broad nature of Soviet laws, and the free manner in which the KGB can interpret these, any "suspect" has committed some "crime against the state" as the KGB defines the term.

The implications of this statement are significant. In a nation in which the state owns all property, where everyone works for the state, and where only approved opinions may be held, a person who has accidentally broken or lost some of the "people's property," who has made a mistake, who has not worked hard enough, who has talked to a foreigner, or who has merely expressed what he inferred was an innocent opinion, may be *ipso facto* guilty of a "crime against the state."

Thus, those who fall into the various categories of "natural suspects" constitute a reservoir of potential victims for the secret police. A person who belongs to one of these groups may go unmolested for a long period. His arrest, when it ultimately takes place, will occur when the KGB needs arrests. For example, when party policy decrees that there shall be a widespread campaign against "foreign spies," the KGB will seek its victims from those whom it regards as potential foreign agents. If the Party decides upon a campaign against nationalist tendencies among Soviet citizens, the KGB will select its victims from the nationality which has been singled out as an "example." If there is a struggle for power within the Party hierarchy, the victims of the KGB will be selected from those members of the Party who lose out in the struggle. Sometimes purely bureaucratic needs within the secret police organization are the occasion for arrest. Since the effectiveness of the organization in the various districts is judged by the number of arrests and convictions obtained, when the leader of a district fears that his organization is falling behind, he will generate local pressures for more arrests; the victims, of course, will be selected from appropriate groups of suspects. The result of all of this is that many of the victims of the secret police apparatus are seized for reasons quite beyond their own control, which are not immediately related to anything that they may have done.

4. The Accumulation of Evidence

It is an administrative principle of the Soviet government that no one may be arrested unless there is evidence that he is a criminal.

According to the practice of the KGB this means that when a man falls under the suspicion of a KGB officer, this officer must accumulate "evidence" that the man is a "criminal" and take this evidence to the state prosecutor,

who must then issue a warrant before the arrest can be carried out. When a man falls under the suspicion of the KGB, an officer in the investigation section draws up a plan for the investigation of his case. The plan describes why the man is suspected, who are his suspected associates, what evidence is needed to arrest him, how he shall be placed under surveillance, how the evidence shall be gathered, and how he shall be arrested. This plan is submitted to his superiors for comment, criticism, and approval, and is then put into action. The investigating officer accumulates "evidence" by showing that the victim had a reason to be a criminal (i.e., that he was a member of a suspect group) and by accumulating the statements of spies and informers with regard to him. If this "evidence" is not sufficient to satisfy the officer, he places the suspect and the suspect's friends and associates under surveillance. These friends and associates may be held for interrogation in order to supply evidence against the suspect, the reason for their seizure being that they are associates of a suspect, and therefore suspect themselves.

Covert surveillance and the arrest of associates are carried out carefully, but they cannot always be concealed from the suspect. He may become aware of it, or his friends may tell him. As he comes a marked man in the eyes of his friends, they begin to avoid him. Their demeanor sometimes indicates to him that he is under suspicion. The knowledge that he will be arrested, without knowledge of when this will occur, obviously creates anxiety in the intended victim. Although KGB officers know about the psychological effect which surveillance has upon suspects, and make use of it, they do not use it with the calculated cunning that the victim sometimes supposes. Poorly concealed surveillance, and the arrest of friends and associates, followed after an indefinite period by the arrest of the main suspect, are not necessarily stage maneuvers to frighten the victim. Often they are simply evidence of rather slow and clumsy police activities.

The investigating officer in charge of the "case" is usually not above the rank of major. His standing in the eyes of his superiors and his future career in the organization are dependent upon his ability to achieve arrest and convictions. His superiors themselves have a similar relation to their superiors. Thus it often happens, especially in times of internal tension, that members of the organization compete with one another in trying to turn up suspects and secure their conviction. To a certain extent, officers are judged by the number of arrests which they obtain. Since Communist legal principles demand that no person be arrested except when it is clear that he is a criminal, officers who arrest men who must later be released are subject to censure. They have made a mistake because they have arrested a man who is not a criminal.

The consequences are important from the point of view of the victim. In effect, any man who is arrested is automatically in the position of being "guilty".†

If the "evidence" should be insufficient to substantiate his guilt, those in charge of his case are subject to censure. In theory, those making the arrest should have accumulated beforehand sufficient evidence of guilt to satisfy both their superior officers and the state prosecutor. It is usually not difficult to satisfy these officials. Nevertheless, this requirement for sufficient evidence of guilt puts pressure upon the junior officers of the KGB, who are anxious

† A discussion of the Communist concept of "guilt" and the meaning of this term to the KGB is presented in Part II, Section 16.

to establish a reputation for themselves, and sometimes they may falsify the "evidence" which they present to the prosecutor. This is a forbidden practice, for which the offending officer could be punished if he were "officially" found out. The officers who took part in staging the famous "doctor's plot" of 1952 were punished later for "falsifying the evidence." But when the KGB is under pressure to secure convictions, and when this pressure comes from high in the Party, "falsification of evidence," like the use of physical brutality in obtaining confessions, may be a widespread procedure. It is never "officially" condoned.

Anyone arrested by the KGB must know that in the eyes of the Soviet state, and in the eyes of those who have arrested him, he is a "criminal." The only question to be settled after his arrest is the extent of his criminal activity and the precise nature of his crimes. The officers in charge of his case, both those who have made the arrest and those who will carry out the interrogation, have a personal interest in seeing that the arrested man makes a prompt and extensive confession, for their own reputations are at stake. These officers work on a "time table": They are expected to "settle the case" within six weeks to three months after their victim has been seized by producing a satisfactory protocol, upon which a "trial" can be based.

5. The Arrest Procedure

It is a Communist principle that men should be arrested in a manner which will not cause them embarrassment and that the police should carry out arrests in a manner which will not unduly disturb the population.

In the United States, it is said that a man is "arrested" when the police seize him, detain him, or otherwise deprive him of his freedom; and United States law requires that the police obtain a "warrant" or comply with certain other legal procedures before carrying out an arrest. In the Soviet Union the KGB may obtain a "warrant" from the state prosecutor before seizing a man, but it is not required to do so. It may "detain" a man on suspicion and interrogate him "to see if he is a criminal." What would be called "arrest" in the United States may be carried out in the Soviet Union with or without a warrant. The process of seizure is the same in either case.

For more than 20 years it has been the practice of the Russian State Police to seize their suspects in the middle of the night. The "midnight knock on the door" has become a standard episode in fiction about Russia. The police are well aware of the fact that the intended victim, forewarned by his previous surveillance and the changing attitude of his friends, is further terrified by the thought that he may be awakened from his sleep almost any night and taken away. The official explanation for the nighttime arrests is that such a procedure avoids the embarrassment and alarm which would be created if the victim were seized in the daytime. It is customary for the arresting officer to be accompanied by several other men. He usually reads to the prisoner the arrest warrant, if there is one. It does not, of course, specify the details of the crimes committed. The prisoner is then taken promptly to a detention prison.

An alternate method of arrest, for which the same official explanation is given, is to carry out the procedure in a city not the home of the suspect. In order to accomplish this, men under suspicion are ordered by their superiors to travel on some pretext or other. Before the victim reaches his destination, he is arrested and taken from the train. A third method, said to be preferred

when there is no warrant, is to seize the victim suddenly as he walks down the street. All of these procedures create intense anxiety in the victim, and in the population at large they create all of the alarm which may be generated by the sudden and unexplained disappearance of a person from the midst of his family and friends.

6. The Detention Prison

According to Soviet administrative principle, a man who is arrested by the state police is not "imprisoned." He is merely "detained." In theory, he is detained in a quiet, healthy atmosphere, where he has an opportunity to meditate upon his crimes, and a chance to talk them over freely and at length with police officers, without being prejudiced by friends, associates, or lawyers, who might induce him to distort the truth.

In most of the large cities of the Soviet Union the KGB operates detention prisons. These prisons contain only persons under "investigation," whose cases have not yet been "settled." The most modern of these prisons are separate institutions, well built and spotlessly clean. In addition to the cells for the prisoners, they contain offices for the KGB units, rooms in which interrogations are carried out, and other rooms, usually in the basement, in which prisoners are executed when such punishment is decided upon. There are attached medical facilities and rooms for the care of the sick detainees. An exercise yard is a standard facility. In outlying areas or undeveloped regions, the KGB may occupy a separate wing of a general prison and use this as a detention prison. Facilities in these areas may be ancient or inadequate, depending upon what is available; but the detention wing itself is administered separately from that of the rest of the prison, and prisoners under detention are segregated from general prisoners.

Most of the cells in Soviet detention prisons are designed for one occupant. The typical cell is a small cubicle, about 10 ft. long by 6 ft. wide, containing a single bunk and a slop jar. It usually has no other furnishings. Its walls are barren, and it is lighted by a single electric lamp in the ceiling. One wall usually contains a small window above eye level, from which the prisoner can see nothing of his outside environment. The door contains a peephole, through which the guard in the corridor outside may observe the prisoner at will without the prisoner's knowledge.

There also may be cells which are large enough to hold two or more prisoners. Except for size, such cells are not different from the others. In general, prisoners whose cases are relatively unimportant, those against whom the evidence is "complete," and those who have indicated a willingness to talk freely are placed in cells with other prisoners, some of whom are usually informers. Those whose cases are important or "incomplete," those from whom information is desired, and those for whom public trials or propaganda confessions are planned are put in solitary confinement.

Such typical cells will not, of course, be found in all prisons, and especially not in those which are old or improvised; but the general aspect of barrenness and complete lack of access to the outside world is characteristic.

7. The Regimen Within the Detention Prison

The arresting officers usually do not give the prisoner any reason for his arrest beyond that in the warrant which they read to him. They usually search

him, and also search the place in which he lives. They then take him directly to the prison. Here he is asked a few questions about his identity, and his personal valuables and outer clothing are taken from him. These are carefully catalogued and put away.[‡] He may or may not be given a prison uniform. He is usually examined by a prison physician shortly after his incarceration.

The entire introduction to the detention prison is brief and is carried on without explanation. Within a few hours after his arrest the prisoner finds himself locked up within a cell.

An almost invariable feature of the management of any important suspect under detention is a period of total isolation in a detention cell. The prisoner is placed within his cell; the door is shut, and for an indefinite period he is totally isolated from human contact except by the specific direction of the officer in charge of his case. He is not allowed to talk to the guards or to communicate with other prisoners in any manner. When he is taken from his cell for any reason, he is accompanied by a guard. If another prisoner approaches through the corridor, he turns his face to the wall until the other prisoner has passed.

The hours and routine of the prisoner are rigidly organized. He is awakened early in the morning and given a short period in which to wash himself. His food is brought to him. He has a short and fixed time in which to eat it; the standard diet is just adequate to maintain nutrition. He must clean himself and police his own cell; but he is not allowed enough time to keep it spotlessly clean. At some time in the morning he usually has an exercise period. Typically, his exercise consists of walking alone in the exercise yard. If he is in rigid isolation, he may not be allowed to exercise at all. He is usually allowed a slop jar in his cell which he can utilize for defecation and urination, but sometimes this is taken away. Then he must call the guard and perhaps wait for hours to be taken to the latrine.

At all times except when he is eating, sleeping, exercising, or being interrogated, the prisoner is left strictly alone in his cell. He has nothing to do, nothing to read, and no one to talk to. Under the strictest regimen, he may have to sit or stand in his cell in a fixed position all day. He may sleep only at hours prescribed for sleep. Then he must go to bed promptly when told, and must lie in a fixed position upon his back with his hands outside the blanket. If he deviates from this position, the guard outside will awaken him and make him resume it. The light in his cell burns constantly. He must sleep with his face constantly toward it.

If the prisoner becomes ill, he is taken to a prison physician, by whom he is treated with the best medical care available, according to the practices common to Soviet medicine. If necessary, he may be placed under hospital care; but as soon as he has recovered, the regimen will be resumed.

Prisoners who attempt to commit suicide are thwarted and carefully nursed until they recover; then the regimen is resumed.

Deviations from the prescribed regimen are promptly noticed by the guards and are punished. Disturbed behavior is punished also. If this behavior persists

[‡] It is an interesting comment on the "legalistic" behavior of the KGB that prisoners who have been detained, interrogated, tortured, imprisoned at length, and ultimately released after many years may then receive all of their original clothing and personal valuables, which have been scrupulously cared for during their imprisonment.

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and the officer in charge of the case is convinced that the prisoner has become mentally ill, the man may be placed under medical care until his health has returned; then the regimen is resumed.

8. Effects of the Regimen in the Isolation Cell

The effects upon prisoners of the regimen in the isolation cell are striking. § It has been mentioned that the man who has been arrested by the KGB is usually intensely apprehensive. Often he has known for weeks that he would be arrested, but has had no clear knowledge of when, or for what reason. He has been seized in the middle of the night and taken without explanation to a formidable prison. He knows that no friend can help him, and that the KGB may do with him what they please.

A major aspect of his prison experience is isolation. Man is a social animal; he does not live alone. From birth to death he lives in the company of his fellow men. When he is totally isolated, he is removed from all of the interpersonal relations which are so important to him, and taken out of the social role which sustains him. His internal as well as his external life is disrupted. Exposed for the first time to total isolation in a KGB prison, he develops a predictable group of symptoms, which might almost be called a "disease syndrome." The guards and KGB officers are quite familiar with this syndrome. They watch each new prisoner with technical interest as his symptoms develop.

The initial appearance of an arrested prisoner is one of bewilderment. For a few hours he may sit quietly in his cell looking confused and dejected. But within a short time most prisoners become alert and begin to take an interest in their environment. They react with expectancy when anyone approaches the door to the cell. They show interest and anxiety as they are exposed to each new feature of the prison routine. They may ask questions or begin conversations. Some make demands: They demand to know why they are being held and protest that they are innocent. If they are foreign nationals, they may insist upon seeing their consular officers. Some take a "You can't do this to me" attitude. Some pass through a brief period of shouting, threatening, and demanding. All of this is always sternly repressed. If need be, the officer in charge of the case will see the prisoner, remind him of the routine, threaten him with punishment, and punish him if he does not subside. || During this period the prisoner has not yet appreciated the full import of his situation. He tries to fraternize with the guards. He leaves part of his food if he does not like it. He tries to speak to prisoners whom he passes in the corridors and reaches back to close the door behind him when he is taken to the latrine. The guards refer to this as the period of getting "acclimatized" to the prison routine.

After a few days it becomes apparent to the prisoner that his activity avails

§ The reaction to be described in this and in the following sections is that of a "typical" man, previously untrained, who has never been imprisoned or isolated before, and who has been arrested for a serious, but not specified, crime against the state of which he could be "guilty." Even among such men, there are wide differences in the capacity to tolerate the isolation regimen. Some become demoralized within a few days, while others are able to retain a high degree of self-control for months. In addition to this, most men possess the capacity to adapt to isolation, and those who experience the isolation regimen a second time almost always tolerate it better, and longer. Previous training and the circumstances of seizure are important also.

|| The punishments used are described in Sections 10 and 13.

him nothing, and that he will be punished or reprimanded for even the smallest breaches of the routine. He wonders when he will be released or questioned. His requests have been listened to but never acted upon. He becomes increasingly anxious and restless, and his sleep is disturbed. He begins to look up alertly when anyone passes in the corridor. He jumps when the guard comes to the door. He becomes "adjusted" to the routine in his cell and goes through it punctiliously; but he still leaves some of his food, and occasionally he reveals by small gestures his lack of complete submission to his environment.

The period of anxiety, hyperactivity, and apparent adjustment to the isolation routine usually continues from one to three weeks. As it continues, the prisoner becomes increasingly dejected and dependent. He gradually gives up all spontaneous activity within his cell and ceases to care about his personal appearance and actions. Finally, he sits and stares with a vacant expression, perhaps endlessly twisting a button on his coat. He allows himself to become dirty and disheveled. When food is presented to him, he eats it all, but he no longer bothers with the niceties of eating. He may mix it into a mush and stuff it into his mouth like an animal. He goes through the motions of his prison routine automatically, as if he were in a daze. The slop jar is no longer offensive to him. Ultimately he seems to lose many of the restraints of ordinary behavior. He may soil himself. He weeps; he mutters, and he prays aloud in his cell. He follows the orders of the guard with the docility of a trained animal. It usually takes from four to six weeks to produce this phenomenon in a newly imprisoned man.

9. The Feelings and Attitudes of the Prisoner During the Isolation Regimen

The man who for the first time experiences isolation in prison is, of course, experiencing far more than simple isolation. He usually feels profoundly anxious, helpless, frustrated, dejected, and entirely uncertain about his future. His initial reaction to the isolation procedure is indeed one of bewilderment and some numbness at the calamity which has befallen him. This is followed by a period of interest and apprehension about every detail of the prison regimen, accompanied by hope that he can explain everything as soon as he gets a chance, or an expectation that he will be released when the proper authorities hear about his plight. Such hopes last but a few days, but they keep him alert and interested during that time.

As hope disappears, a reaction of anxious waiting supervenes. In this period, the profound boredom and complete loneliness of his situation gradually overwhelm the prisoner. There is literally nothing for him to do except ruminate, and because he has so much to worry about, his ruminations are seldom pleasant. Frequently, they take the form of going over and over all the possible causes for his arrest. His mood becomes one of dejection. His sleep is disturbed by nightmares. Ultimately he may reach a state of depression in which he ceases to care about his personal appearance and behavior and pays little attention to his surroundings. In this state the prisoner may have illusory experiences. A distant sound in the corridor sounds like someone calling his name. The rattle of a footstep may be interpreted as a key in the lock opening the cell.

Some prisoners may become delirious and have visual hallucinations. God may seem to appear to such a prisoner and tell him to cooperate with his

interrogator. He may see his wife standing beside him, or a servant bringing him a large meal. In nearly all cases the prisoner's need for human companionship and his desire to talk to anyone about anything becomes a gnawing appetite, which may be as insistent as the hunger of a starving man. If he is given an opportunity to talk, he may say anything which seems to be appropriate, or to be desired by his listener, for in his confused and befuddled state he may be unable to tell what is "actually true" from what "might be" or "should be" true. He may be highly suggestible, and he may "confabulate" the details of any story suggested to him.

Not all men who first experience total isolation react in precisely this manner. In some, these symptoms are less conspicuous. In others, dejection and utter despondence set in earlier, or later. Still others, and especially those with pre-existing personality disturbances, may become frankly psychotic. However, frank psychotic manifestations, other than those of the "prison psychosis" described above, are not usual, primarily because those having charge of the prisoners usually break the routine of total isolation when they see that disorganization of the prisoner's personality is imminent.

10. Other Pressures of the Isolation Regimen

Not all of the reaction to this imprisonment experience can be attributed to isolation alone. Other potent forces are acting upon the newly imprisoned man. The prisoner's *anxiety* about himself is compounded by worry about what may happen to his friends and associates, and, in the case of those who possess information which they wish to hide, apprehension about how much the KGB knows or will find out. Even in the absence of isolation, profound and uncontrolled anxiety is disorganizing. *Uncertainty* compounds his anxiety also. The newly arrested prisoner does not know how long he will be confined, how he will be punished, or with what he will be charged. He does know that his punishment may be anything up to death or permanent imprisonment. Many prisoners say that uncertainty is the most unbearable aspect of the whole experience. *Sleep disturbances* and nightmares lead to further fear and fatigue.

The effects of isolation, uncertainty, and anxiety are usually sufficient to make the prisoner eager to talk to his interrogator and to seek some method of escape from a situation which has become intolerable. But, if these alone are not enough to produce the desired effect, the officer in charge has other simple and highly effective ways of applying pressure. Two of the most effective of these are *fatigue* and *lack of sleep*. The constant light in the cell and the necessity of maintaining a rigid position in bed compound the effects of anxiety and nightmares in producing sleep disturbances. If these are not enough, it is easy to have the guards awaken the prisoner at intervals. This is especially effective if the prisoner is always awakened as soon as he drops off to sleep. The guards can also shorten the hours available for sleep, or deny sleep altogether. Continued loss of sleep produces clouding of consciousness and a loss of alertness (both of which impair the victim's ability to sustain isolation. It also produces profound fatigue.

Another simple and effective type of pressure is that of maintaining the *temperature of the cell* at a level which is either too hot or too cold for comfort. Continuous heat, at a level at which constant sweating is necessary in order to maintain body temperature, is enervating and fatigue-producing. Sustained cold

is uncomfortable and poorly tolerated. Yet another method of creating pressure is to reduce the food ration to the point at which the prisoner is constantly hungry. This usually involves loss of weight, which is often associated with weakness and asthenia. Furthermore, *deprivation of food* produces lassitude, loss of general interest, and some breakdown of courage. Some people become profoundly depressed when deprived of food. Chronically hungry people can sometimes be induced to overcome a surprising number of their inhibitions in order to relieve their hunger.

The effects of isolation, anxiety, fatigue, lack of sleep, uncomfortable temperatures, and chronic hunger produce disturbances of mood, attitudes, and behavior in nearly all prisoners. The living organism cannot entirely withstand such assaults. The Communists do not look upon these assaults as "torture." Undoubtedly, they use the methods which they do in order to conform, in a typical legalistic manner, to overt Communist principles, which demand that "no force or torture be used in extracting information from prisoners." But all of them produce great discomfort, and lead to serious disturbances of many bodily processes; there is no reason to differentiate them from any other form of torture.

11. The Interrogator

The KGB officer who has charge of a case during the period of suspicion, surveillance, and arrest is now supplanted by another officer who is charged with the interrogation of the prisoner and the preparation of the deposition. (Prisoners commonly refer to this document as the "confession"). The officers who specialize in interrogation are relatively junior also; they come from a generation which has grown up under the Communist regime and are selected for the KGB in part because of their evident devotion to the Party and its program. The majority are first recruited from the ranks of the armed services, or the Komsomol. They are usually chosen on the basis of demonstrated Party loyalty and a "horseback opinion" of their aptitude for KGB work. Nearly all of them have had the equivalent of a secondary school education, and some have had more schooling. Many of them are ardent Party members, with an almost religious dedication to the organization.

Within the KGB, assignments to interrogation are not highly regarded. Most KGB officers prefer to go into offensive espionage or join paramilitary units. Relatively few of them wish to become involved in political counterespionage, investigation, and interrogation. Such work is not looked upon as glamorous or exciting. Very often it involves assignment to outlying and relatively dull regions of the Soviet Union, and usually is hard and thankless. The interrogation of prisoners is a tiring and an emotionally trying procedure. Thus, there is often a deficiency of applicants for work in this section of the secret police, and local district officers of the KGB must assign men to fill the necessary quota at the state police school. The assignment is often given to the least desirable men in the organization. It can be assumed that a majority of those involved in the investigation and interrogation of unimportant prisoners are men of average ability with no great enthusiasm for their job. However, the KGB does also possess highly skilled, well-educated, extremely knowledgeable, experienced, and able interrogators who are devoted to their profession and proud of their abilities. The interrogator assigned to an important prisoner can be expected to be a man of such high caliber.

Some of those who go into secret police activity receive only a sort of "on-the-job" training under the guidance of more senior and experienced men, but a fair proportion of these police officers are especially trained at a KGB school. The course in the conduct of interrogations includes a description of the various interrogation methods that will be discussed shortly. Trainees are allowed to observe a demonstration interrogation, but do not actually conduct interrogations themselves. No formal training in psychology, psychiatry, pharmacology, or physiology is included in the curriculum. There are no representatives of any of these sciences on the faculty and, as far as we have been able to ascertain, there never have been. Trainees do receive information from experienced police officers on how to prepare a dossier, how to "size up" a man, and how to estimate what sort of methods to use in "breaking" him; but the instructors draw entirely upon police experience. They have a contempt for theoretical psychiatry and psychology, and for instruments such as the polygraph, which most of them regard as a useless gadget.

12. Interrogation

When the prisoner has been arrested and incarcerated in his cell, the officer in charge of his case submits to his superiors a plan for the interrogation of the prisoner. This plan is drawn up on the basis of what is already known about the prisoner. It describes the methods to be used upon him, the attitudes to be taken toward him, the type of crimes which he is believed to have committed, and the assumed motivation for them. His superiors may criticize or comment upon this plan and offer added suggestions, based upon their own experience. The purpose of this plan appears to be primarily that of making the interrogator approach the prisoner with a definite conception of what he wants to do and how he is going to proceed in doing it. The plan need not be adhered to rigidly if the development of the case indicates that changes should be made. In some prisons the interrogator reviews the plan with his superiors after each session and describes to them how he intends to conduct the next session.

If a prisoner indicates at the time he is seized that he is aware of his guilt and is prepared to describe his crimes, the interrogator may begin to question him very soon after his imprisonment. This is true especially when the police already possess a great deal of "evidence" and the prisoner readily confesses to the "crimes" which the interrogator wishes to establish.

Likewise, if the prisoner is seized without a warrant, the interrogator is likely to begin the questioning early. Soviet law specifies that if a man is "detained on suspicion" the first protocol of his interrogation must be given to the state prosecutor within 10 days, so that an arrest warrant may be issued or the man may be released. In general, interrogators are constrained to comply with this regulation, and they try to produce enough evidence to obtain an arrest within 10 days. In many such cases, because they have little except suspicion to guide their questioning, they are necessarily vague in describing the prisoner's crimes to him. They must be cautious lest the prisoner get wind of what they want him to say and refuse to say it. It is probably this, more than any calculated cunning, which causes them to make to the prisoner such enigmatic statements as, "It is not up to me to tell you what your crimes are; it is up to you to tell me"—statements which lead the perplexed prisoner to rack his brain for an answer. The prosecutor is not hard to satisfy, and the interrogator nearly always obtains enough evidence to make an "arrest." If not, he can apply for an extension of

the detention period. The law provides no real protection for the prisoner.

Interrogations, once begun, are continued until "the case is complete," but in some circumstances they are intentionally delayed in their onset. It appears that his delay is imposed when the prisoner is defiant, when he is thought to be withholding information, when the KGB is seeking a confession to crimes other than those for which it has "evidence," and especially when it wants to use the prisoner for a public trial or to obtain a propaganda confession from him. In such cases, the interrogation begins when the officer in charge feels that the prisoner is ripe for it. This is usually when he observes that the prisoner has become docile and compliant and shows evidence of deterioration in his mood and personal appearance.

Interrogations are almost uniformly carried out at night. It is said that this practice of night interrogation originated not from any preconceived idea of its effectiveness, but because the early Chekists were so overburdened with police duties during the day that they could find time for interrogations only at night. For one reason or another, it has become standard procedure, possibly because the physical and psychological effects of night interrogations produce added pressure upon the prisoner. He is deprived of sleep, and placed in a state of added uncertainty by never knowing when he will be awakened and questioned. Typically, he will be awakened suddenly by the guard shortly after he has dropped off to sleep. Without explanation, he is taken from his cell and down several corridors to a small and barren interrogation room, equipped with a desk and chair for the interrogator and a stool for the prisoner. The lighting is arranged so that the prisoner can be placed in a bright light, while the interrogator sits in relative darkness. Sometimes a stenographer is present in one corner of the room to take notes. More frequently the interrogator makes his own notes, writing as the prisoner speaks. Usually only one interrogator is present, but occasionally other officers are introduced. Sometimes interrogators alternate, for psychological reasons, one being "friendly" and the other "hostile." If his work is successful, the original interrogator may carry the case through to a conclusion; but if he does not achieve the desired goal, he may be removed, and a new officer takes over the interrogation.

The atmosphere of the interrogation room generally has some degree of formality about it. The interrogator may be dressed in full uniform. If he wishes to impress the prisoner, he may take out a pistol, cock it, and lay it on the desk before him; but this psychological gambit does not seem to be a required part of the protocol. The interrogator adjusts his attitude toward the prisoner according to his estimate of the kind of man he is facing. If the dossier indicates that the prisoner is a timid and fearful man, the interrogator may adopt a fierce and threatening demeanor. If the prisoner is thought to be proud and sensitive, the interrogator may be insulting and degrading. If the prisoner has been a man of prestige and importance in private life, the interrogator may call him by his first name, treat him as an inferior, and remind him that he has lost all rank and privilege. If the prisoner is thought to be suggestible, the interrogator will try to influence him by suggestion. If the prisoner is known as venal and self-seeking, the interrogator may try to bribe him with promises of reward for cooperation. If the prisoner has a tendency to blame others, the interrogator may try to let him place the blame upon others, while describing his own activities as harmless. If the prisoner is known to have a wife and children for whom he

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cares deeply, the interrogator may threaten harm to them if the prisoner does not cooperate, and promise to protect and help them if he does. If it is known that the prisoner has been unfaithful to his wife or has committed some crime, such as embezzlement, the interrogator may blackmail him by threatening exposure or punishment unless he cooperates. All these, and many other tricks, may be employed. They are not based upon a scientific theory of human behavior; they are tricks of the trade, so to speak, developed out of police experience and applied on a "rule-of-thumb," "common-sense" basis.

Almost invariably the interrogator takes the attitude that the prisoner is guilty and acts as though all of his crimes were known. Almost invariably he points out to the prisoner that he is completely helpless and that there is no hope for him unless he cooperates fully and confesses his crimes completely. Almost never does the interrogator state specifically what the prisoner's crimes actually are. This is left up to the prisoner, who is told, in effect, that he knows the extent of his own crimes and need only make a complete statement of them.

Almost invariably the interrogator does not accept the early statement of the prisoner. No matter what crimes he confesses, the interrogator forces the prisoner to repeat his statements again and again, and to elaborate on them endlessly. Almost always he uses any discrepancies as indications of lying and questions the prisoner at length about them.

The first interrogation sessions are nearly always concerned with a complete review of the entire life experience of the prisoner. The interrogator wishes to know about the prisoner's background; his class origin; his parents, brothers, and sisters; his friends and associates, and everything that he has done throughout his life. If the case is of any importance, no detail is overlooked, and every period of the prisoner's life must be accounted for.

This review of the prisoner's life may occupy several interrogation sessions. It has several purposes. The primary one is to complete the prisoner's dossier. It gives the interrogator a thorough picture of the type of man he is dealing with and further guides him to the man's weaknesses, which can be exploited. Furthermore, requiring a man to account for every detail of his life produces a voluminous and involved story, and the prisoner can scarcely avoid being trapped into inconsistencies if he is concealing anything. The information obtained from the life history can be compared with that already in the police files, which are usually extensive. It enables the police to know the associates of the prisoner—information which is important, because these may be his "accomplices in crime," who can be made suspects also, and interrogated for further information. Perhaps its most important purpose is that it reveals many "criminal" features of the prisoner, such as "reactionary class origin," "membership in reactionary organizations," and "association with enemies of the state," which are, by Communist definition, "crimes" no matter how long ago they were "committed."

The prisoner, taken from his cell after a long period of isolation, anxiety, and despair, usually looks upon the first interrogation as a welcome break. The mere opportunity to talk to someone is intensely gratifying. Many prisoners have reported that after long periods of isolation they eagerly anticipate interrogation sessions and try to prolong them simply for the companionship which they afford. Not infrequently the prisoner also regards interrogation as an opportunity to justify himself, and feels a false assurance that he can "explain everything" as soon as he is given a chance.

Usually he is much taken aback by the fact that his crimes are not specified and that his guilt is assured. He is further distressed when his protestations of innocence are greeted as lies. But the opportunity to talk about his life experiences is generally looked upon, especially by a person from Western society, as an opportunity to justify his behavior. Many men willingly divulge all that they can remember about themselves, because they feel quite sure that they have done nothing which may be regarded as criminal. They are unaware that, from the point of view of Communist theory and of the KGB, much of their past behavior undoubtedly will be construed as "criminal" and held against them. If the interrogator offers them the opportunity to have paper and pencil in their cells and to write out their biographies, they seize upon this avidly as a means of relieving the boredom of the tedious, lonely routine to which they are exposed.

13. Pressures Applied by the Interrogator

As the interrogation proceeds, the interrogator changes his behavior according to his previous plan and the development of the case. If the prisoner is cooperating and talking freely, the interrogator continues to show a relatively friendly attitude. But sooner or later he invariably expresses dissatisfaction with the information which the prisoner has given, no matter how complete it may be. He demands new details, and usually shows an especially great interest in the "accomplices" of the prisoner and the "organization" to which he is supposed to have been attached. When the prisoner protests that he has told all, and denies any other crimes or accomplices, the interrogator becomes hostile and begins to apply pressure.

Some of the pressures which can be applied simply by altering the routine within the cell have been described. The interrogator has many others at his command. Continuous and repetitive interrogation is an effective and very common form of pressure. Another which is widely used is that of requiring the prisoner to stand throughout the interrogation session or to maintain some other physical position which becomes painful. This, like other features of the KGB procedure, is a form of physical torture, in spite of the fact that the prisoners and KGB officers alike do not ordinarily perceive it as such. Any fixed position which is maintained over a long period of time ultimately produces excruciating pain. Certain positions, of which the standing position is one, also produce impairment of the circulation. Many men can withstand the pain of long standing, but sooner or later all men succumb to the circulatory failure it produces. After 18 to 24 hours of continuous standing, there is an accumulation of fluid in the tissues of the legs. This dependent edema is produced by the extravasation of fluid from the blood vessels. The ankles and feet of the prisoner swell to twice their normal circumference. The edema may rise up the legs as high as the middle of the thighs. The skin becomes tense and intensely painful. Large blisters develop, which break and exude watery serum. The accumulation of the body fluid in the legs produces impairment of the circulation. The heart rate increases, and fainting may occur. Eventually, there is a renal shutdown, and urine production ceases. Urea and other metabolites accumulate in the blood. The prisoner becomes thirsty and may drink a good deal of water, which is not excreted but adds to the edema of his legs. Men have been known to remain standing for periods as long as several days. Ultimately they usually develop a delirious state, characterized by disorientation, fear, delusions, and visual hallu-

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cinations. This psychosis is produced by a combination of circulatory impairment, lack of sleep, and uremia.

Periods of long standing are usually interrupted from time to time by interrogation periods, during which the interrogator demands and threatens, while pointing out to the prisoner that it would be easy for him to end his misery merely by cooperating.

The KGB hardly ever uses manacles or chains, and rarely resorts to physical beatings. The actual physical beating is, of course, repugnant to overt Communist principles, and is contrary to KGB regulations also. The ostensible reason for these regulations is that they are contrary to Communist principles. The practical reason for them is the fact that the KGB looks upon direct physical brutality as an ineffective method of obtaining the compliance of the prisoner. Its opinion in this regard is shared by police in other parts of the world. In general, direct physical brutality creates only resentment, hostility, further defiance, and unreliable statements.

It is a general policy that the interrogator must obtain the written permission of his superiors before using extreme coercive measures of any sort upon prisoners. In actual practice such permission is sought only if the officer in charge of a case feels that there is a need for a direct brutal assault. The KGB recognizes that some men who are intensely afraid of physical assault may break down if beaten once or twice, and it does use this procedure deliberately, though uncommonly. Generally speaking, when an interrogator strikes a prisoner in anger, he does so "unofficially." The act may be a true expression of his exasperation, and evidence that he, himself, is under emotional strain.

The use of brutality in the Russian secret police waxes and wanes in cycles that recur throughout the years. When feelings of insecurity develop within those holding power, they become increasingly suspicious and put great pressures upon the secret police to obtain arrests and confessions. At such times police officials are inclined to condone anything which produces a speedy "confession," and brutality may become widespread. Later, when the Party leadership again feels secure, its suspiciousness subsides. Meanwhile, demands arise for "reform," and the cessation of "irregular practices" by the secret police. Soon stern orders are issued that prisoners shall not be subjected to brutality, and some unfortunate police officers are punished for their past behavior. After this, brutality will be scrupulously avoided until the next wave of suspicion arises.

Regardless of brutality, it can be taken for granted that some period of intense pressure and coercion will be applied to every prisoner, no matter how cooperative he tries to be at first. This period of pressure will be accompanied by expressions of displeasure and hostility from the interrogator, and sometimes from the guards also. It appears to be a working principle of the KGB that no man ever reveals everything voluntarily. It has been a universal experience of prisoners of Communist state police that no matter how much a man tells, he is always pressed to tell more—in fact, those who talk are often the ones who are hounded the longest. Men who immediately, and without pressure, volunteer all that they know do not thus allay the suspicions of their interrogator. Eventually, when their flow of information runs out, and persuasion yields no more, they find themselves put through the same routine of repetitive torture which more recalcitrant prisoners encounter.

14. The "Friendly Approach"

The interrogator will continue this pressure until he feels that the prisoner is nearly at the end of his rope. At this point he introduces a psychological gambit which is probably the most successful of any of the tricks at his command. He suddenly changes his demeanor. The prisoner, returned once again to an interrogation session that he expects will be a repetition of torture and villification, suddenly finds that the entire scene has changed. The interrogation room is brightly lighted. The interrogator is seated behind his desk, relaxed and smiling. Tea and cigarettes are waiting on the table. He is ushered to a comfortable chair. The guard is sent away, and sometimes the secretary also. The interrogator remarks about his appearance. He is sympathetic about the discomfort which he has been suffering. He is sorry that the prisoner has had such a difficult time. The interrogator himself would not have wished to do this to the prisoner—it is only that the prison regulations require this treatment, because of the prisoner's own stubbornness. "But let us relax and be friends. Let us not talk any more about crimes. Tell me about your family"—and so on. The usual line is to the effect that, "After all, I am a reasonable man. I want to get this business over as much as you do. This is as tiresome to me as it is to you. We already know about your crimes; it is a mere formality for you to write out your confession. Why don't we get it over with so that everything can be settled and you can be released?"

Prisoners find this sudden friendship and release of pressure almost irresistible. Nearly all of them avidly seize the opportunity to talk about themselves and their feelings, and then go on to talk about their families. Most of them proceed from this almost automatically to giving the information which the interrogator seeks. Even if they do not provide everything the interrogator wants at this time, he may continue his friendly demeanor and the relaxation of pressure for several more sessions before resuming the old regimen of torture. But if the prisoner does reveal significant information and cooperates fully, the rewards are prompt and gratifying. The interrogator smiles and congratulates him. Cigarettes are forthcoming. There is a large meal, often excellently prepared and served; and after this the prisoner returns to his cell and sleeps as long as he likes, in any position that he chooses.

15. The Course of the Interrogation

Such friendly and rewarding behavior will continue for several days—usually as long as the interrogator feels that a significant amount of new information is being produced. At this point the prisoner may conclude that his ordeal is over; but invariably he is disappointed. For as soon as the interrogator decides that no new information is being yielded, the regimen of constant pressure and hostile interrogation is resumed. Again it is carried to the point at which the prisoner is near breakdown. Again it is relaxed, and again the prisoner is rewarded if he cooperates. In this manner, proceeding with regular steps, alternating punishment with reward, the interrogator constantly presses the prisoner to revise and rewrite the protocol until it contains all the statements which he desires, and is in a final form which meets with his approval. When it has at last been agreed upon and signed, the pressure is relaxed "for good"; but the prisoner continues to live in his cell, and remains under the threat of renewed pressure, until such

time as he has been taken before a "court," has confessed, and has been "sentenced."

Throughout the entire interrogation period, the prisoner is under some form of medical observation. Prison physicians are familiar with all the effects produced by KGB procedures, and evidently they are skilled at judging just how far the various procedures can be carried without killing or permanently damaging the prisoner. Prisoners who have been beaten have their wounds carefully dressed. Those who are forced to stand for long periods of time are examined periodically during the procedure. Sometimes the physician intervenes to call a halt if he feels the prisoner is in danger. The unintended death of a prisoner during the interrogation procedure is regarded as a serious error on the part of the prison officials.

16. The Psychological Interaction Between Prisoner and Interrogator

During the interrogation the psychological interaction between the prisoner and the interrogator is perhaps even more important than the physical aspects of the procedure itself. It has been said that the interrogator approaches the prisoner with the assumption that he is guilty. It is important that we define this statement precisely. It does not mean that the interrogator is not aware of the "true facts" of the situation, but means that he interprets them in the light of Communist ideology. The KGB officer is a Communist. He has selected this prisoner from one of the groups of suspects described earlier. The man was arrested because the KGB, which represents the Communist State, regarded him as a menace to the Party or its program. Anyone who is a menace to the Party is, by definition, guilty of threatening the security of the Communist State. Ergo, from the Communist point of view, the man is "guilty." In other words, the KGB has decided that this man must be dealt with in some manner, "for the good of the State." Once the man has been arrested, this point is no longer open to question. This is the true, or "esoteric," meaning of the frequently repeated Communist statement that "in a Communist state, innocent people are never arrested." If one accepts their definition of "guilt" and "innocence," this is indeed a fact. This is what is meant by the statement that the interrogator "assumes that the prisoner is guilty at the time of his arrest."

However, the interrogator frequently does not know just what specific major "crimes" the man may have committed. In fact, KGB officers have stated quite clearly that most of the people whom they arrest have not really "committed" any specific serious crimes at all. But they do know that the prisoner has "committed" some acts which are contrary to the broad Soviet laws against political crimes, as well as minor "actual" crimes. Furthermore, experience has taught them that if they put enough pressure upon the prisoner, sooner or later they will get him to "confess" to "acts" which can be interpreted as a "major crime." Once this confession has been obtained, the KGB can demand from the "judge" a punishment equivalent to that which it intended that the prisoner should receive when it arrested him.

Much of the activity of the interrogator can be looked upon as a process of persuasion. The primary work of the interrogator is to convince the prisoner that what he did was a crime. Having got the "evidence" from his informers and from the prisoner, it is up to him to persuade the prisoner that certain actions which he has carried out constitute a crime. The prisoner is usually prepared to

admit that the acts have been carried out. Often as not, he revealed them freely because he did not consider them to be criminal. It is up to the interrogator to make the prisoner see that these acts do constitute a serious crime, and acknowledge this by signing a deposition and making a confession in court if necessary. The Communist legal system requires that this be done before a case can be settled.

The fact that the interrogator is a dedicated Communist makes his task of persuasion somewhat easier. The interrogator approaches the prisoner with the knowledge that the man is actually a criminal by Communist definition, and he has a large body of convenient Communist definitions and rationalizations to help him in convincing his victim of this. For example, according to Communist theory, acts are judged by their "objective effects" rather than by the motives of those who committed them. Thus, if a prisoner, through an honest mistake, has damaged a piece of machinery belonging to the State, he is a "wrecker." Objectively, he has wrecked an important piece of property belonging to the State. The fact that he did this with innocent motives is meaningless. Thus a "mistake," an "accident," and a "crime" all become the same thing. Likewise, according to Communist theory, a man's acts and thoughts are judged "consequentially." Thus, if a prisoner is known to have said that the KGB is too powerful, the fact that he has said this may make him a "traitor" and "saboteur." The Communist reasoning is that a man who says that the KGB is too powerful believes that it is too powerful and will ultimately act upon this belief. This ultimate act will constitute sabotage and treason; therefore, the man is a saboteur and a traitor. Similarly, a man who has friendly associations with foreign nationals must have some friendly feeling toward them; foreign governments are capitalist and imperialist; a man who is friendly to foreign nationals is giving help to the agents of capitalist imperialism; therefore, the man is a spy whether he realizes it or not. Such peculiar twists of Communist logic are difficult for Western prisoners to accept at first. Usually they object strenuously to these definitions of "treason," "wrecking," and "sabotage"; but ultimately, under constant pressure and persuasion, a prisoner usually agrees to some statement to the effect that "by Communist laws I am a spy." Thereafter, there follows further argument and persuasion to the effect that a person is judged by the laws of the country in which the crimes are committed. Ultimately the qualifying phrase is omitted, and the final deposition contains the simple statement, "I am a spy."

An effective method of persuasion frequently used when more than one suspect is involved in the same "case" is what KGB officers often call "confrontation." When one prisoner has "broken," has made the necessary rationalizations, has accepted his interrogator's persuasion, and has signed an acceptable protocol, he is brought face to face with a fellow prisoner. Usually he has implicated this man in his own protocol and has "confessed" to the same crimes which the recalcitrant prisoner has denied. The resisting man feels completely undermined when he sees that his former comrade and friend has capitulated. He may bitterly accuse him and be bitterly accused in turn, but quite frequently the experience makes him feel the futility of further resistance, and often the prisoner who has confessed patiently attempts to persuade his friend to accept the same rationalization that he has made and to bow to the inevitable.

One important reason why KGB officers regard interrogation as emotionally trying lies in the fact that a strong interpersonal relationship grows up between

the prisoner and the interrogator. In many respects this is like the relationship that grows up between a psychiatrist and his patient. The prisoner, for all the pressure that he has been under, eventually finds in the interrogator the one human being in his environment to whom he can relate. The interrogator, on his part, has no personal hostility to his victim. He may actually like him. Especially when dealing with a Communist, he may feel that but for chance he would be in the prisoner's place. Interrogator and prisoner spend many hours of many days together. A certain comradeship and understanding grows up between them.

Many of these KGB officers impress the prisoner by the sincerity of their dedication to Communism and its ostensible ideals. The interrogator often displays a patient sympathy which becomes apparent to the prisoner. His attitude that "this is something we must go through with, and neither you nor I can stop until you have cooperated and signed a proper confession" is to some extent a genuine attitude. The KGB system allows of no other solution from the interrogator's point of view. It is in fact true that the interrogation will have to go on until a proper deposition has been signed. The prisoner often comes to recognize this sincerity. Many see that indeed the interrogator must follow the system, and there is nothing which he can do about it. Thus, the prisoner, in his need for companionship, may displace his hostility from the interrogator to the "system." Many interrogators genuinely plead with the prisoner to learn to "see the truth," to "think correctly," and to "cooperate."

There are instances of prisoners who signed depositions largely out of sympathy for their interrogators, because they felt that these men would be punished if a proper deposition were not forthcoming. In other words, the warm and friendly feelings which develop between the prisoner and the interrogator may have a powerful influence on the prisoner's behavior. Not infrequently, the prisoner develops a feeling that the interrogator is the only warm and sympathetic person in the hostile and threatening world in which he exists. His need for human companionship and acceptance is such that he overlooks the pressures which the interrogator puts upon him and ascribes them to the necessities of the system rather than to the willful activity of his "friend." If the interrogator rejects the prisoner or implies that he disapproves of him, the prisoner may feel bereft. He may blame himself for having let the interrogator down or for not having cooperated with the man who was trying to help him. His efforts to maintain his good standing in the eyes of his "friend" become an important motive for him to seek a rationalization which will allow him to produce a protocol of the type his "friend" needs. This same desire "not to go back on a friend" also becomes one of the reasons why he does not repudiate the protocol later when it is presented in court.

17. The Reaction of the Prisoner to the Interrogation

The way in which a prisoner reacts to the whole process of interrogation is to a great extent dependent upon the manner of man he is, his preexisting attitudes and beliefs, and the circumstances surrounding his arrest and imprisonment. All prisoners have this in common: They have been isolated and have been under unrelenting pressure in an atmosphere of hostility and uncertainty. They all find themselves in a dilemma at the time that the interrogation begins. The regimen of pressure and isolation has created an over-all discomfort which is well nigh intolerable. The prisoner invariably feels that "something must be done to end

this." He must find a way out. Death is denied to him. Ultimately, he finds himself faced with the choice of continuing interminably under the intolerable pressures of his captors or of accepting the "way out" which the interrogator offers. The "way out" is a rationalization. It allows the prisoner to meet the demands of his interrogator by degrees, at the same time retaining within himself some shred of belief that by his own standards he has not capitulated. With rare exceptions prisoners always accept this "way out," provided the pressures are sufficiently prolonged and intense and the interrogator can adjust his persuasiveness in a proper manner.

Various categories of prisoners respond to different types of persuasion. Persons who have been lifelong members of the Communist Party are familiar with the Communist concept of "crime" and the functions of the KGB. Furthermore, they have all been trained in the ritual of self-criticism, confession, punishment, and rehabilitation, which has been part of Communist procedure since before the Revolution. Many Communists can rationalize a belief that they are actually criminals, as specified by the KGB, and come to see their punishment as necessary for the good of the State and the Party. To the true Party member, martyrdom for such a reason carries with it an air of triumph.

Those who have studied the purge trials of the old Bolsheviks are convinced that this form of reasoning was behind their apparently peculiar behavior at the trials. These men held nothing sacred but the Party. They had dedicated their lives to the principle that the Party could do no wrong. They themselves looked upon deviationists as criminals worthy of the ultimate punishment. Zinoviev, Kammenev, and their followers knew themselves to be chronic oppositionists. Lenin had expelled them from the Party during the 1917 revolution and had reinstated them after they had confessed and recanted. In 1927 they had again been expelled by the Party and temporarily exiled; they had made abject recantations and had again been reinstated. But these men were chronic nonconformists. In some way, by their attitudes rather than by any deed, they had continued to be in partial disagreement with Stalin and other members of the party leadership. When they were arrested in 1936, it is said that the NKVD did not have very great difficulty in convincing them that they were criminals. They readily agreed to it. There was more difficulty in convincing them that the good of the Party demanded that they be publicly tried and executed; but after much tortuous logic they accepted this also. It is said that the interrogators and prisoners broke down and wept together when the final agreement was reached. Their "confessions" before the court contained an exposition of their crimes of which they were guilty "according to Communist theory," expressed as if these crimes had "actually been committed" in the Western, or popular, use of the word, whereas they were actually only "objective" or "consequential" crimes as defined by the Communist theory.

Non-Communist prisoners of idealistic beliefs or Socialist sympathies apparently make ready targets for the logic of the interrogator. Such persons are usually compelled to agree that the ostensible and idealistic motives of the Communist Party are "good," and that those who oppose these ideals are "bad." The rationalization in this case takes the form of getting the prisoner to say that the Communist Party has the same value system that he does. Something which the prisoner has done is "bad" by his own definition. From this point the prisoner proceeds through the usual steps to the ultimate signing of the deposition.

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Persons who carry with them strong feelings of guilt associated with highly organized systems of moral values likewise become ready targets for the persuasion of the interrogator. Very few people are entirely free of guilt feelings, but often such feelings are found in the highest degree in those in whom they are least appropriate. For example, many strongly religious people have a profound sense of sin. They feel guilty of shortcomings of their own, which are much smaller than those found in most of their fellow men. They constantly see themselves as transgressing their own moral code, and in the need of forgiveness for doing so. Skilled interrogators make use of this. They point out that many of the ostensible ideals of Communism are the same as the ideals to which the prisoner himself subscribes. Since he has transgressed his own code, he is a criminal in Communist eyes also. Thus, Chinese interrogators who are experienced in the interrogation of priests develop an extensive knowledge of the Bible and Christian theology. They can draw parallels between Christianity and Communism, and, in fact, often identify the two as being different aspects of the same philosophical system. It is not hard to show the prisoner many points at which he has failed to live up to the Christian code. It is usually not very difficult to create within him a feeling of guilt about this. From here, it is also not difficult to get him to agree that, because of his un-Christian acts, he has injured "the people," whom Christ loved. The Communist Party is also interested in the welfare of "the people"; therefore, all the prisoner needs to do is confess that he has sinned against "the people" and has committed crimes against them. A confession of "crime against the people" is a satisfactory confession in a Communist court.

An additional vulnerability of highly moral people is that they find it difficult to tell a lie under any circumstances. Priests, for example, often give aid and comfort to those oppressed by Communist states. It is not too difficult for the police to find out about this, and it sometimes is very difficult for the priest to lie about it when presented with the evidence. From this point, it is not difficult to persuade the priest to confess that he has indeed given comfort to the enemies of the regime.

On the other hand, persons with so-called sociopathic or psychopathic personalities, who have few or no moral scruples, may also be vulnerable. Such persons have very little attachment to friends and to moral principles. They may be readily accessible to bribes and to various promises of reward. Under pressure they quite readily reveal all of the information they possess and freely implicate their associates. They readily rationalize the necessity for finding a "way out" of their situations and have little or no conflict about deserting any principles which they were supposed to possess. They need only to see what the KGB wants in the form of a "confession" in order to fabricate one without compunction. KGB officers are not entirely taken in by this lying. They do not hesitate to use the "confession," but they edit out the more fantastic parts from the final deposition.

Persons who are "caught with the goods" in actual crimes are equally vulnerable. This includes persons who have "actually" in the Western sense of the word committed espionage or treason. If the KGB has uncovered real evidence of this, it is quite likely that sooner or later, with constant pressure and interrogation, they will get the prisoner to admit it also. In this instance, the facts of the case are agreed upon by all concerned, and it remains only to determine the punishment.

The maze in which any prisoner finds himself has so many ramifications that it is almost impossible for him to escape from it without signing a protocol and being convicted. Anything he has done may be a crime. He has been adjudged guilty before his arrest. He is put in a situation of intolerable pressure. It is made clear to him that his only way out of this situation is to cooperate with the interrogator. He is offered a reasonable rationalization for doing so. Sooner or later under these circumstances, the prisoner and the interrogator almost inevitably come to an agreement upon a deposition which satisfies the interrogator. But not inevitably: There are reported instances of prisoners who have refused to sign any form of deposition and have remained in detention indefinitely, with their cases still unresolved, or have been tried summarily by an administrative court of the state police. Gomulka resisted the Polish UB. Elizabeth Lermolo, a woman who was implicated in the Kirov murder, resisted the NKVD and later escaped. It is alleged that she remained in detention, with periodic interrogation from 1936 until 1941, when the Germans overran her prison and she was released. It is said that she never signed a deposition. Whether this is a true story or not is not known. But it is known that of all the millions who passed through the hands of NKVD during the time of the purges, and who have fallen into the hands of its successors since then, few have escaped without signing a deposition which amounted to a confession of crime, as crimes are defined in Communist Russia.

18. The "Trial"

When the prisoner has finally reached the point of admitting his "crimes," and he and the interrogator have agreed upon a protocol satisfactory to both of them, he experiences a profound feeling of relief, which is sometimes shared by the man who has been questioning him. Even though his crimes may be serious and the punishment for them severe and of unknown degree, he welcomes a surcease from the unrelenting pressures and miseries of the interrogation procedure. Whatever the future may hold for him, he has for the moment found a way out of an intolerable situation.

When a satisfactory deposition has been prepared and signed, the pressures upon the prisoner are customarily relaxed. He is allowed to sleep as long as he wishes; he may have reading and writing material in his room. Sometimes he can join with other prisoners in periods of exercise. His meals improve and his guards become friendly, or even solicitous. This easy treatment is continued until he is thoroughly rested and his health has been restored. Then, in most cases, he is taken before a "court." The state prosecutor presents the court with the signed protocol and questions the prisoner about his crimes. Sometimes a "defense attorney" is assigned; this man invariably limits himself to requesting leniency from the court. The whole procedure is usually brief and formal. There are no verdicts of "not guilty." The function of the "judge" is solely that of presiding over the trial and passing upon the prisoner a sentence which has usually been agreed upon beforehand by the prosecutor and the KGB officer in charge of the case.

It is this aspect of the proceedings which is most bewildering to Western observers. It is easy to understand how prisoners can be tortured into signing confessions of crimes which they did not commit, but it is difficult to understand why the prisoners do not renounce these confessions later at the public trials.

Beginning with the purge trials of the 1930's, the NKVD and its successors

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and offspring in Russia, the Eastern European nations, and China have presented the world with a series of public trials at which the prisoners calmly and seemingly without coercion make outrageous "confessions" of unbelievable crimes, praise their captors, and ask for the severest punishment for themselves. These prisoners have included important Communist officials, former NKVD officers, non-Communist citizens of various categories, and foreigners of the most diverse backgrounds. All of these prisoners were apparently "innocent"; some faced certain death, and many were profoundly anti-Communist. Men of the highest caliber and integrity, such as Cardinal Mindszenty, William Oatis, and Robert Vogeler, seemed to have the strongest possible motivations to resist; but none of them stood up in court and denounced the confession and his captors. This phenomenon demands an explanation.

The explanation is available, but it is not simple. It is necessary to examine the proposition in detail in order to view it in its proper light.

First, it is by no means true that "all prisoners confess freely at a public trial." Only a very small minority of prisoners of the Communist state police ever appear at a public trial. The KGB will not expose a prisoner to a public trial unless it is convinced that he will go through with his confession as planned. If there is any doubt about this, no public trial is held. But even with this precaution the KGB is not infallible. At the purge trials several of the prisoners tried to recant parts of their confessions. When a prisoner tried to recant, the prosecutor halted the examination of that person. Usually, when the man returned from his cell several days later, he was again docile and cooperative. In the Bulgarian trials, Traicho Kostov repudiated his entire protocol on two occasions. Some of these so-called "public trials" have not actually been public. They have been carried out in the presence of a select audience while movies and recordings are made of the prisoner's words, which are later transmitted to the public.

The majority of prisoners do "come to trial," but these trials are not public. They are held *in camera*. The state police are concerned only with political crimes and espionage. Their prisoners are tried before "military tribunals," which are not public courts. Those present are only the interrogator, the state prosecutor, the prisoner, the judges, a few stenographers, and perhaps a few officers of the court. At such a trial there is no opportunity for "public protest," and any protest which is made can be readily expunged from the record. So far as the prisoner is concerned, this so-called trial appears as nothing more than the next step in his process of imprisonment. He has been imprisoned, tortured, and interrogated and has signed a "confession." Following that, he has experienced more lenient treatment and has had a period of rest and rehabilitation. But he has not been out of the prison. He has not seen any of his friends or family or anyone interested in defending him. He has remained entirely in the hands of his interrogators and guards, with access to no one else. When he finally comes before the "court," he sees no one except the state prosecutor, the judge, and the court officials. The defense attorney, if one is assigned, shows not the slightest interest in refuting any of the "evidence" in the confession or in establishing a plea of "not guilty." He never questions the fact that the prisoner is guilty as charged. Sometimes he asks the judge for leniency; but not infrequently he informs the court that he is convinced the prisoner is just as big a monster as the prosecution says he is, and that he cannot bring himself to ask the court for leniency. The judge likewise shows no interest in the question of guilt or innocence. He limits

himself to maintaining order in the court and passing sentence. If the prisoner has any illusions that the prosecutor, the judge, and the defense attorney are going to allow him any opportunity to dispute the "facts in the case," these are soon dispelled.

By no means do all prisoners receive a "trial" of any sort. Those who are stubborn or repeatedly recant their confessions during the interrogation procedure will not be trusted, even at private trials. Uncooperative and stubborn prisoners, and those who might make embarrassing statements are "dealt with administratively." For many years the state police have had the right to carry out "administrative" trials for any prisoners whom they do not wish to expose to the usual trial procedure. These administrative trials consist of simply presenting the prisoner to a group of three senior police officers (the Troika), who pass sentence immediately and have it carried out forthwith. These administrative trials took place within the detention prison. Sometimes the prisoner was not even present at them; sentence was passed by the Troika merely upon the basis of the signed protocol. Sometimes the alleged records of these trials were made public, but generally the fact that such a trial had taken place was never revealed. For every Soviet citizen who has appeared at a public trial, there have been thousands who have been tried only at private trials by military tribunals, and hundreds who were dealt with administratively by the police themselves. Thus, a great number of high Communist officials, captured German officers, and similar prisoners who fell into the hands of the Russian secret police were not tried at all. So far as the public was concerned, they merely disappeared.

During the last few months there have been press reports that the right of administrative trial has been withdrawn from the KGB. It remains to be seen whether or not this is true.

19. Public Confessions

If we exclude from consideration all those prisoners who are dealt with administratively, two questions remain: 1. Why do all of those prisoners who are tried in private confess almost without exception? 2. Why do some prisoners confess at public trials, where there is actually some opportunity to make an open denial of guilt?

In response to the question of why prisoners at private trials confess almost without exception, the following answers can be given:

1. The setting of the private trial, as we have just described it, makes it apparent to the prisoner that any attempt at recantation is useless.

2. The prisoner at a private trial is always under actual threat by the KGB. The officer in charge of his case has clearly indicated to him that any attempt to alter or recant any part of his confession will lead to an immediate resumption of the interrogation-torture regimen. This threat is as poignant as a cocked pistol. The prisoner has just finished being carried through torture and interrogation over and over again to the point at which it is absolutely intolerable to him. He has already decided that, whatever his sentence may be, he prefers to receive his punishment rather than to return to the horrible ordeal through which he has just passed. In the opinion of KGB officers, this is the most potent reason why no prisoner changes his story.

3. Warm and positive feelings between prisoners and their interrogating officers often develop during the interrogation process, and many prisoners come to trial with the feeling that if they attempt to alter their testimony they will be

dishonoring an agreement with their interrogators (see Section 16).

4. Finally, it is to be emphasized that, in spite of all these detriments, some prisoners do recant at their private trials. The court then decides that these prisoners have not yet reached a full awareness of their crimes. They are sent back to the detention prison and once again put through the torture-interrogation regimen. Sooner or later, they learn that pleas of "not guilty" are not acceptable in Soviet courts, and that they must behave themselves at their trials. Otherwise, they are indefinitely detained or executed.

In answering the question of why some prisoners confess publicly when there is some opportunity for them to renounce their confessions and thereby embarrass their captors, one must consider the various categories of those who have been tried in public. Widely publicized trials are staged by the Communists only under exceptional circumstances and always for propaganda purposes. They are carefully managed "set pieces" in which every performer must play his role exactly as prescribed. The KGB and other Communist police organizations select the prisoners for these shows with great care.

The first category of those who have made public confessions are prominent Bolsheviks who have fallen from grace: Zinoviev, Kamenev, Rykov, Bukharin, Radek and their associates, at the time of the great purges; more recently, Laslo Rajk, in Hungary; Traicho Kostov, in Bulgaria, and Slansky, Clementis, and others, in Czechoslovakia. The list is extensive, but not nearly so extensive as the list of prominent Communist officials who were liquidated administratively.

But why did those confess; who did so? The old Bolsheviks "confessed" primarily because they were lifelong, dedicated Communists. They had committed their lives to the belief that nothing is sacred but the Party, and the Party is always right. If there be a central point in the Communist creed, it is this. These men all subscribed to the belief that opposition to the Party line, as expressed by the Party leaders, is a crime. Whatever else they were, they were "chronic oppositionists," and knew themselves to be so. They all subscribed to the Communist ritual of public self-criticism and punishment. Nearly all of them had at one time or another publicly criticized themselves and had been punished. Several had been expelled from the Party, not once but several times. They all knew themselves to be in opposition to the Party leadership, and they all felt guilty about this. In spite of this, they still considered themselves to be Bolsheviks, and were prepared in principle to accept any demand which the Party might make upon them, even to the point of death.

All of the evidence points to the fact that the NKVD, using the interrogation-pressure process which we have described, persuaded these men to accept the concept that because they were opposed to Stalin, the leader of the party, they were wrecking the Party. As good Bolsheviks, the Party called upon them to make the ultimate sacrifice by denouncing themselves and giving up their lives so that the world could know that opposition to the Party leadership was both criminal and futile. The "crimes" to which they confessed publicly were not "actual" crimes in the Western sense of the term, but were "objective" or "consequential" crimes, which must result from their opposition according to Communist theory. Ultimately they made their confessions almost with an air of triumph, and went to their deaths seeing themselves as martyrs to the cause to which they had devoted their lives. Some of them—Krestinsky, for example—had difficulty, recanted a bit, and defied the prosecutor briefly; but after a few

days of persuasion they resumed their roles and carried the trial through to its end.

This behavior on the part of the highly disciplined and religiously dedicated "old Bolsheviks" is not unusual in the annals of human behavior. It is not inexplicable that these men who hated Stalin nevertheless played their roles and went to their deaths for the sake of the Party. The reader has but to consider how many soldiers, in wars throughout the course of history, have proceeded to certain death in response to what they knew to be stupid and disastrous orders, given by incompetent officers whom they hated; and how many wives have spent a lifetime in supporting and defending drunken and brutal husbands, whom they detested. People dedicated to a cause will destroy both their lives and their reputations for it. That Communists will do this we know well from our experiences in this country. The Rosenbergs could have escaped death had they been willing to confess to their espionage and reveal their contacts, but they refused to do so.

The information available to us about the trials of the Communist leaders in the Eastern European satellites indicates that their behavior can be explained on the same basis as that of the old Bolsheviks. These trials were not the success that one might assume from their awesome popular reputation. Rajk confessed obediently and went to his death like a proper Bolshevik; but Kostov denounced his accusers and proclaimed his innocence. The Polish police never dared to expose Gomulka to a trial of any sort. Tito defected and purged his would-be purgers. There have been no truly public trials since those times. The trials of Slansky and his colleagues were recorded in private, and selected excerpts of the transcripts were broadcast. Beria and Abakumov were tried entirely *in camera* by a military tribunal.

Another category of those who have confessed publicly is that group of intellectually or idealistically motivated people who were thought to be opposed to Communism, or at least to be non-Communist, prior to their arrest. Most prominent in this group is Cardinal Mindszenty; also included in this are other Roman Catholic priests from the satellite countries.

The Mindszenty case is the best known. In the public mind Mindszenty is the prototype of "Communist brain washing." Among the known facts of his case are these:

Cardinal Mindszenty came from an old and aristocratic Hungarian family; he had many friends among the Hungarian aristocracy and the nobility. He had always supported the monarchical form of government. During the period between the wars, when Hungary was a regency, he had been in favor of the restoration of the Hapsburgs to the Hungarian throne. He was a man of strong religious convictions, who held himself, as well as others, to a high code of moral conduct. Governmental administrators sometimes found him a difficult man to deal with because he was inflexible in upholding his moral principles.

During the Second World War he came into open conflict with the Nazis, and with the members of the Hungarian Fascist Arrow-Cross organization; but these organizations did not dare arrest him because of his position in the church and because of the respect and admiration in which the Roman Catholic population of Hungary held him. It was partly because he had become such a symbol of the integrity and independence of the church that he was elevated to the position of Cardinal in 1945.

Cardinal Mindszenty did not hesitate to make known his opposition to the Communist regime. He made no attempt to conceal his sympathy for many of

those oppressed by it. He maintained his association with his friends among the former aristocracy. He gave support and encouragement to those, both inside and outside the country, who, he thought, might end the Communist dictatorship and restore a legal government. He was arrested in December, 1948, after a propaganda campaign had been carried on against him for several years. Approximately six weeks later, he "confessed" at a public trial. All of the evidence indicates that the treatment which Cardinal Mindszenty received during his period of interrogation did not differ in any important detail from that which is used by the KGB, which we have described above. The only drugs which the Cardinal received were stimulants to keep him awake during the long hours of interrogation, and possibly sedatives to allow him to sleep when he was exhausted. There is no reason to believe that any new, esoteric, or unknown method was used in handling him and no need to assume that there was.

Cardinal Mindszenty's confession is published in the "Hungarian Yellow Book." In his published depositions, he acknowledges that he is a royalist, that he had favored the restoration of the monarchy, and that he had hoped that the international situation would develop in a way which would cause the United States to intervene and allow the monarchy to be restored. He agrees that he had continued to communicate with his monarchist friends, both in Hungary and abroad, and with various American authorities. He agrees that he was hostile to the Communist regime. "It was in the interests of this that I did everything to support American politics in Hungary, partly by my activity against the Hungarian Republic, and partly by constantly urging their interference, by a regular service of facts, and by espionage." This sentence, translated by Hungarian Communists, is typical of those found in Communist depositions; it can equally well be interpreted to mean that Mindszenty had committed espionage (in the Communist sense of the word) or that he had urged the Americans to make known the facts and to commit espionage. The "facts" in the "Yellow Book," even if accepted at face value, reveal the Cardinal to have been a Hungarian patriot and a vigorous anti-Communist, but not a spy.

Cardinal Mindszenty's trial was "public," but not all of his statements were broadcast. The broadcast portions were cut, evidently at points where he made significant reservations. But, even so, his widely publicized confession was no declaration of profound guilt. At his trial Cardinal Mindszenty stated that he recognized that some of his activities had been contrary to the laws of the Communist state. He stated that he was sorry he had violated the laws. If his actions had in any way harmed the people of Hungary or the Roman Catholic Church, he asked forgiveness for this. He agreed that he would be willing to step aside as leader of the Hungarian Church if this would be in the best interest of the people and the Church.

On the basis of this confession the Communists convicted him of being a "reactionary criminal" and of taking part in a "treasonable monarchist plot" to secure United States intervention and to overthrow the government of Hungary. He was sentenced to life imprisonment.

Still a third category of those who have confessed publicly are various foreign businessmen, newspapermen, and military men who were arrested or captured in the course of their routine duties, of whom Robert Vogeler, in Hungary, and William Oatis, in Czechoslovakia, are examples. In all these cases the following factors are evident:

1. The confessions made by the prisoners were "actually true" in the sense that some of the specific acts described in the confessions actually occurred, although not necessarily in the way in which they were described.

2. The interpretation put upon these acts was the Communist interpretation.

3. The prisoner had been brought to agree that in the country in which he was arrested the Communist laws applied and, therefore, these acts constituted a crime. The prisoner, therefore, pleaded guilty to "crimes" which were "crimes" by Communist definition, but which he had not intended as crimes, or considered to be crimes at the time that he carried them out. This qualification, however, was missing from the statements made by the prisoners at the trials.

4. All of these prisoners were under the threat of renewed interrogation-torture if they recanted or changed their confessions.

5. Many of them had the actual or implied promise, as well as the firm belief, that they would be released if they cooperated with the police.

6. Furthermore, all of them were able to rationalize that their confessions would not be believed by Americans in any case. This rationalization was essentially a correct one—their confessions were widely disbelieved in the United States, but in some other areas of the world their confessions are accepted as factual.

20. Punishment

The period of interrogation and detention, no matter how long and terrible it may be, is not considered imprisonment. The "punishment" begins only after the sentence has been passed. Sometimes a "lenient" judge will allow the prisoner to count his period of detention as a part of a prison sentence, but often this period is discounted altogether. According to Communist theory, the purpose of prison systems is to rehabilitate criminals through wholesome work, productive activity, and education. For this "purpose" prisoners are transported to Siberia or the Arctic, where most of them spend their terms working in mines and construction projects under brutal and primitive conditions. Those who are fortunate enough to receive any education during this procedure are "educated" by further indoctrination with Communist ideas.

III. Practices in Communist China

1. A Comparison of Chinese Methods with Those of the KGB

The methods used by the state police in China are basically similar to those used by the KGB, but they are not "carbon copies," like those of the Communist-dominated countries of Eastern Europe. They are different in several important details.

1. The goal of the KGB detention and interrogation procedure is the preparation of a protocol upon which a suitable punishment can be based, so that the KGB can then deal with the prisoner according to its preconceived idea of what must be done for the good of the Party and the Soviet State. In a minority of cases, this includes a public trial for propaganda purposes. The KGB does not appear to be greatly concerned about the future attitudes and behavior of the prisoner, so long as he behaves properly during the period of trial and sentencing.

The goal of the Chinese detention and interrogation procedure, on the other hand, is primarily that of ensuring that the prisoner will develop a relatively long-lasting change in his attitudes and overt behavior, which will be sustained after his release, so that he will not again constitute a danger to the Communist

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state.[¶] The securing of information by interrogation, the preparation of proper protocols and "confessions," and the participation of the prisoners in public propaganda trials are secondary to this primary goal.

2. Unlike the KGB, the Chinese make extensive use of group interaction among prisoners, in obtaining information, applying pressures, and carrying out indoctrination.

3. Whereas in the Soviet Union and Eastern European states the ritual of public self-criticism, confession, self-degradation, punishment, and rehabilitation is a Party procedure confined to Communists, the Chinese have extended this practice to the non-Party population, and to the prison population in particular, and have made it an important feature of their indoctrination procedure.

4. In China, at the moment at least, the period of detention is greatly prolonged. Whereas in the Soviet Union trial and sentencing take place fairly soon after the completion of the interrogation and the preparation of a suitable protocol, in China the preparation of a first confession is only a prelude to a long period of indoctrination and reeducation, which may go on for years, and is not terminated until those in charge of the prisoner believe that he has finally adopted a "correct" attitude and behavior. It is only then that the "trial," the "sentencing" and the formal term of imprisonment or other punishment begins.

Procedures in China are much less standardized than those in Russia, and many variations upon them can be expected. This is in part the result of the newness of the Chinese Communist regime and the lack of homogeneity of its personnel and facilities. The procedure outlined below is carried out in the large prisons in major cities. In outlying areas there may be differences in detail, but the general principles and practices are the same.

2. Background and Organization of the Chinese State Police

The Chinese Communist Party was formed in 1919; from that time forward a steady flow of young Chinese Communists were trained in Russian Party schools. Nevertheless, Chinese Communism developed along lines which were in many ways different from those of Western Communist parties. Communism was able to sustain itself only in rural China, where it fed upon poverty and discontent of the Chinese peasants. Mao's army lived off the countryside and of necessity became closely identified with the value systems of the peasant group, from which most of its numbers originated.

In the years from 1936 to 1946, while these Chinese Communists were busy expanding and recruiting new members from the general Chinese population, they gradually developed a highly organized and vigorous indoctrination program. It was aimed at all potential recruits who happened to fall into their hands. Uneducated peasants, city workers, and captured KMT troops, as well as interested students from the universities, were subjects for this indoctrination.

In order to create in this heterogeneous group a feeling of comradeship and identification with the peasant Communists, it was necessary to make them "cut their ties to the past." Therefore, the training program included a deliberate as-

[¶] The official regulations for Chinese detention prisons include the following statement: "In dealing with the criminals, there shall be regularly adopted measures of collective study classes, individual interviews, study of assigned documents, and organized discussion, to educate them in the admission of guilt and obedience to law, political and current events, labor production, and culture, so as to expose the nature of the crime committed, thoroughly wipe out criminal thoughts, and establish a new moral code."

sault upon all of the traditional "bourgeois," "reactionary," "upper-class" attitudes, beliefs, and practices the recruits brought with them. Trainees were forced to abandon their refinements of speech, manner, and behavior, their reverence for family ties and worldly goods, and to adopt the crude and earthy attitudes and behavior of the new "people's army." This questioning and discussion of behavior and value systems was accompanied by the inculcation of a fanatical enthusiasm for the Communist movement, built around the ideal of the rejuvenation of China and its reestablishment of a dynamic, modern society (an ideal which had been shared by the majority of Chinese intellectuals and reformers since the days of Sun Yat Sen). The combination of Communist practices, such as public confession and self-criticism, with traditional Chinese methods of learning by rote and repetition resulted in a highly effective method of persuasion. These methods, as applied to the general population following the success of the revolution in 1949, have been referred to as methods of "thought reform" or "ideological reform" #; and, as we have seen, these phrases were finally transferred into English under the generic term of "brain washing."

The Chinese have shown great skill in the development of these methods and their application, but, like the Russians, they developed their methods by trial and error, through practice, and through the application of known principles. There is no evidence that psychologists, neurophysiologists, or other scientists participated in their development.

After the Communist triumph in 1949 a large number of "special advisers" were sent from Russia to help set up the Chinese state police and espionage systems, and to train the Chinese in Soviet methods.

The Chinese state police are organized on the same lines as the KGB. The central direction is at Peking and resides in the "Ministry of Public Safety," which is similar to the MVD. This Ministry has diverse functions, such as the control of frontiers, the uncovering of economic and political offenses, the management of traffic on waterways, and even the administration of certain public health measures. Those under its control include 2,000,000 members of the "Public Safety Corps" (similar to the paramilitary units of the KGB) and 10,000,000 "militia," or local police. Both the rural and the city police are responsible to it. The secret police organization, itself, is only one part of the over-all structure of this Ministry.

There are administrative divisions of the state police in each of the administrative areas into which China was divided after the Communist take-over. In each village and hamlet, in addition to the militia and rural police, the Communists set up what they call "Public Safety Subcommittees." These have three to five members selected from the local citizenry on the basis of their loyalty and enthusiasm for the new regime. Their job is essentially that of carrying out "census" investigations. The "census" is an all-embracing record of everything that goes on in the village. It covers the name, sex, age, nativity, occupation, education, family status, political affiliation, social relations, economic condition, and activities of every resident. Everyone who wishes to change his residence, change his occupation, or visit a friend is supposed to report this fact to the Public Safety Subcommittee. Those who wish to travel from one locality to another must obtain a travel pass in order to do so.

The term "brain washing" is not used by the Chinese, and should be avoided, for it has no precise meaning. The Chinese phrase is "Szu hsing K'ei Tsao," which means "ideological reform." It is sometimes shortened to "K'ei Tsao," or "reform."

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Undoubtedly, the records maintained by these rural subcommittees are not so voluminous or detailed as they are alleged to be, and it is quite probable that the peasants have developed various means of circumventing their surveillance. Nevertheless, the men who make up these committees know their villages, and all that goes on within them. They are urged to increase their knowledge by frequent and unexpected visits among their neighbors, and evidently they do so. The result is that the committee is able to extend to the individual Chinese the direct control of the administrative apparatus of the central government to a degree to which this control has not been felt for many centuries. The "census" and the "Public Safety Subcommittee" have been among the most important means by which the Communists have fastened their control upon the vast Chinese population. They are, in effect, an all-pervading arm of the state police.

The local prison is usually at the "hsien," or county, headquarters. This headquarters, like its Soviet counterpart, is divided into an "inquiry and detection" section, a "detention" section, and other sections dealing with staff and administrative work and open police activities. Also, like their Russian counterparts, the Chinese police exercise both police and judicial powers. They not only "investigate" and "arrest"; they also "try" and "sentence." This is one reason why Western prisoners of the Chinese often refer to their interrogations by the police as their "trials." The Chinese state police make no clear distinction between the "trials" and the "interrogations," in spite of the fact that they often carry out a *pro forma* trial and sentencing at the end of the detention period.

The original members of the Chinese Communist police system were drawn from the guerrilla training schools. After 1949 the Communists established large police-training academies. Each of these has a student body of several hundred, who receive a training similar to that of KGB officers. Many former Nationalist police have been retrained and absorbed directly into the Communist apparatus.

3. The Suspects

In China, as in the Soviet Union, those whom the Party decides are a threat to its program automatically fall into the category of suspects. Because China is still in the midst of its revolution, there are large groups of people of "bourgeois" or "reactionary" class background, all of whom are automatically suspect. This includes all members of the "official" class, all of the rural gentry, all of the business and commercial classes of the cities, and property owners in general. All of those who were in any way connected with the Nationalist government are suspect. Unlike the Russians, the Chinese apparently have not yet decided that any national minority groups indigenous to China are automatically suspect. However, all foreigners, and especially all those of Western European or American background, are automatically suspect. All Christians, and especially Roman Catholics, are suspect.

As in Russia, there are "specific" suspects, as well as general categories of suspects. Such specific suspects include persons who are the associates and relatives of other suspects, persons about whom police spies and informers have reported derogatory information, and persons who have been accused of acts or attitudes which threaten the Party or any of its programs. That those who are actual enemies of the regime are all potential suspects goes without saying. In China, as in Russia, nearly anyone in the population may become a suspect; and when he is arrested, the police always have some reason for making the arrest, whether or not this is apparent to the victim.

4. Investigation and Arrest

Observations of the investigation methods of the Chinese state police indicate that they are similar to those used by the KGB. When local security officers decide that a person is a threat to the Party or its program, they satisfy themselves that he should be arrested and then arrest him. From the point of view of the victim, it is important that the Chinese investigating procedures sometimes are not as prolonged and comprehensive as those of the KGB and the prospective victim may have much less opportunity to get wind of what is afoot. Apparently, the Chinese occasionally make quick and arbitrary decisions to carry out arrests, basing these upon the report of a single informer; thus the police may swoop down suddenly upon an unsuspecting victim, who is utterly unaware that they might have any interest in him. There are, however, other occasions on which friends, relatives, and associates have gradually disappeared, or have been questioned by the police over a period of weeks before the final arrest of the central victim, who becomes all too aware of what is in store for him.

As in Russia, the arrest procedure is usually carried out suddenly, and often at night; but the Chinese make no pretense at carrying out their arrests covertly. Often they make a large show of force. The arresting authorities may drive up in a truck with a squad of heavily armed soldiers, surround the home of the victim, and cart him off with much military ceremony. If there is a desire to impress the populace, the arrest may be staged in broad daylight under humiliating circumstances. The arresting officers do sometimes read a "warrant" to the victim. As in Russia, this warrant does not name specific crimes, but names only general ones. The victim is given only a few moments to gather together the barest of his personal essentials before being taken away.

5. Chinese Prison Routine

Usually the prisoner is taken first to a police station, where he is immediately interrogated by several police officers. This initial interrogation is relatively brief, and takes the form of an accusation. Usually, it is carried out by three officers, in full uniform. Their demeanor is invariably arrogant and hostile. As in Russia, they never state specific crimes, but they tell the prisoner that he is accused of "crimes against the people," "treason," "espionage," or some similar broad category of malefaction. Sometimes they simply state to him that he knows why he is there, and what has he to say for himself?

Usually this initial shouting and accusatory interrogation is a brief one, and the prisoner is promptly placed in a cell. However, for psychological reasons, and because of lack of prison facilities, some prisoners are put under "house arrest" immediately after their initial arrest. A single room in the prisoner's home is fixed up as a cell, and guards are assigned. The prisoner stays in this room for a indefinite period of time and is transported back and forth to the prison for further interrogations (which the prisoners often call "trials"). Under standard conditions, however, the prisoner is confined immediately to a prison cell and usually goes through an initial period of solitary confinement.

Chinese prison facilities are much more primitive than many of those in Russia and are utterly inadequate to the prison population which they must at present sustain. Crude, improvised, and extremely primitive prison conditions are often encountered.

The Chinese prisons, like the Soviet prisons, are separated into "detention

prisons" (often called "detention houses"), where prisoners are kept during the period of "investigation" up to the time the cases are "settled," and "punishment prisons" and labor camps, in which sentences are served. The "detention prisons" in large cities are modeled along the lines of the Soviet detention prisons.

In important cases, when there is a need to elicit a good deal of accurate information from the prisoner, the Chinese utilize a routine of isolation, pressure, and interrogation, which is almost identical with that used by the KGB and is described in Part II. The prisoner is placed in a small and barren cell in total isolation. His food, his sleep, his exercise, his position, his activities, and even his eliminative functions are rigidly controlled. After a suitable initial period he is interrogated nightly with increasing pressure until he capitulates. Usually his cell is dirtier and less well heated than those in Russia, and his regimen is different in details—some minor and some major. In China, for example, prisoners in isolation may be required to sleep with their hands inside the blankets rather than outside. The Chinese have a predilection for severely restricting the activities of their prisoners. It seems to be much commoner for them to require men in total isolation to sit rigidly on their bunks at all times when they are not eating, sleeping, or exercising. This adds greatly to their discomfort.

An aspect of their isolation regimen which is especially onerous to Western prisoners is the arrangement for the elimination of urine and feces. The "slop jar" that is usually present in Russian cells is often absent in China. It is a Chinese custom to allow defecation and urination only at one or two specified times each day—usually in the morning after breakfast. The prisoner is hustled from his cell by a guard, double-timed down a long corridor, and given approximately two minutes to squat over an open Chinese latrine and attend to all of his wants. The haste and the public scrutiny are especially difficult for women to tolerate. If the prisoners cannot complete their action in about two minutes, they are abruptly dragged away and back to their cells. The guards customarily allow only this one opportunity for defecation, but they may allow one or more other opportunities to urinate during the day.

All Western prisoners experience extreme discomfort and marked disturbances of bowel function when first exposed to this regimen. Many of them think of it as one of the most fiendish tortures devised by the Chinese Communists, but the practice may simply be an old routine which has been customary in China for many years. It seems to be common to all Chinese prisons, even those in the provinces. Open latrines and public defecation are the custom in rural China, and they do not seem to be regarded as unpleasant by most Chinese.

Similarly, the diet in Chinese prisons is often regarded by Western prisoners as a device for creating discomfort. Rice, millet, and bean soup are the staples. As in Soviet prisons, these are presented to the prisoner in an amount just sufficient to maintain his nutrition if he eats all that he is given. Some Western prisoners regard Chinese prison food as nauseating or distasteful and suffer accordingly. However, there is reason to believe that the Chinese Communists intend to provide in their prisons a diet equivalent to that of an average Chinese peasant or soldier.

The chief features of the isolation regimen in China are the same as those of the Soviet Union: total isolation, utter boredom, anxiety, uncertainty, fatigue, and lack of sleep; rejection, hostile treatment, and intolerable pressure; and reward and approval for compliance.

6. The Interrogator

The interrogation in Chinese prisons is sometimes carried out by two or three officers; but usually one of these is in charge of the case, and it is he who acts as the "friendly" interrogator at times when pressure is released. As in Russia, there may be only one interrogator, and sometimes two interrogators alternate. These men are relatively junior officers. Like their KGB counterparts, many of them are dedicated Communists. They may approach the prisoner with a set of preformed ideas, which are impervious to logic. Some Chinese interrogators are university graduates, and some of them have studied abroad; but many others are men whose limited education has been entirely in Communist Party schools. Such men have an ignorance of the outside world and of Western ideas which makes it even more difficult for Western prisoners to cope with them.

On the whole, Western prisoners have reported that one of the most persuasive features of Communist Chinese interrogators is their evident devotion to their cause and the enthusiastic idealism with which they subscribe to the ostensible goals of Communism. Their patient attempts to teach prisoners "the right attitude" and to get them to understand the Chinese Communist viewpoint has a potent effect upon unsophisticated or idealistic people. At the same time, the relative ignorance of some of these police officers and their dogmatic adherence to Communist beliefs in the face of obviously contrary facts may be profoundly exasperating. Under the pressures of interrogation, prisoners are usually prepared to admit to acts which actually occurred and in time to accept the Communist definition of the nature of these acts; but they have great difficulty in bringing themselves to make confessions which are wildly contrary to fact. The interrogator may insist upon such confessions because of his erroneous beliefs about the nature of Western institutions and Western motives. This may in part explain why protocols are rewritten so many times in Communist prisons, and why the confession is so often rejected as unsatisfactory after the prisoner thinks that he has finally written it in an acceptable form.

7. The Interrogation Procedure

The interrogation procedure is much the same as that used by the KGB. It is usually carried out at night and in a special room; it proceeds stepwise, with a gradual building up of pressure upon the prisoner to an intolerable point, sudden release of pressure, friendly interrogation, rewards for cooperation, and then a repetition of the whole process until a presumably satisfactory first protocol is signed. As in the Soviet Union, the Chinese interrogators adjust their attitudes to the type of man with whom they think they are dealing. They are more likely to shout, revile, and humiliate. Possibly they take this attitude more toward Western prisoners than toward members of their own populace. Their procedures seem to be less formalized, and their pressures are more apt to be primitive and brutal. Important or recalcitrant prisoners are usually interrogated during a period of isolation in a detention cell, under a routine similar to that used in Russia. Less important prisoners may be interrogated while incarcerated in "group cells." In this case the members of the cell group alter their behavior to fit the needs

of the interrogators. Prisoners in group cells may be isolated if their "confessions" are not developing in a satisfactory manner.

In addition to the procedure of long-continued standing, which is frequently employed, the Chinese also use manacles and leg chains, devices which are no longer used by the KGB. Leg chains are hobbling and uncomfortable, but the most excruciating discomfort is produced by the manacles. These are commonly in the form of iron bracelets, several inches in width, and joined rigidly together. The prisoner's hands are placed behind his back, and his wrists are locked within the manacles. The rigid joint of the manacles holds his forearms together side by side, tightly behind his back. This position is a painful one to assume for even a few moments. When a man's arms are held in this position for many hours, he develops almost unbearable pain, primarily in his shoulders and hands. The circulation to his hands is interfered with also. They become swollen and exceedingly tender. The manacles may cut into his wrists and produce wounds which become infected. The Chinese may manacle a prisoner for days or weeks at a time. Such a prisoner is helpless and degraded. In order to eat, he must lie on the floor and lap up his food. He cannot urinate or defecate without help, and frequently he soils himself. He cannot find a comfortable position for sleep. Lying on either side causes pain in the shoulders, and lying on his back is impossible because of tenderness of his hands.

Chinese interrogators and prison guards are more likely to resort to direct physical brutality than their Russian counterparts. When asked to explain the difference between Chinese methods and those of the KGB, one Russian said simply, "The Chinese use torture." This is the exception rather than the rule in their behavior, but nevertheless it occurs. Angry interrogators may slap or beat prisoners and kick them in the shins. Guards may do likewise. Among their most sadistic practices are milking the fingers of manacled prisoners and binding the ankles of those who are forced to stand. Milking pressure on the swollen fingers of a manacled hand is excruciatingly painful. Whenever loose gauze bandages are applied around the ankles of a man who is forced to stand, they seriously constrict his legs as they begin to swell. This also produces intense pain.

As in Russian prisons, medical attention is given prisoners. This is not intended to be inadequate, but it is usually grossly so by Western standards. Some Chinese physicians, like their Russian counterparts, are skilled in estimating the capacity of prisoners to withstand punishment, and usually call a halt to tortures before death or irreparable physical damage occurs.

The content of the interrogation procedure is not merely the tortures which are applied. As in Russia, the persuasion and discussion of the interrogator, which seems to provide a "way out" for the prisoner, is an essential tool in producing the desired confession.

The Chinese more frequently ask the prisoner to write out, rather than relate, his own biography, and often require him to revise it in detail. The interrogation sessions themselves can be taken up with the discussion of this biographic material, but only rarely is the biography itself obtained by direct questioning. All of the psychological devices used by the KGB interrogators are also used by the Chinese interrogators. Night interrogation, with repetitive questioning, undefined crimes, changing attitudes, and increasing pressures alternate with periods of relaxed pressure, "friendship," and reward. Cigarettes, tea, and a friendly

attitude may be the sum total of a reward for cooperation; but even this provides profound relief from the usual interrogation procedures.

The KGB rarely requires a prisoner to fabricate a completely untrue act which is logically absurd. They concentrate more upon persuading him that his actual acts constitute crimes. Chinese interrogators, on the other hand, when they are intent upon establishing charges, such as bacteriological warfare or espionage, may insist that the prisoner include in his confession detailed statements which are not only untrue but logically absurd. One has the impression that this insistence is based upon a combination of ignorance and ineptitude. Prisoners usually balk at making such statements and tend to retract them even after they have been made.* This seems to produce a profound exasperation in many interrogators. It is in such settings that much brutality occurs. Men have been kicked, beaten, starved, locked up in small boxes, hung up by their thumbs or legs, or subjected to other primitive tortures under these circumstances. This has happened especially in POW interrogations.

Persuasion and friendly discussion nevertheless play a major part in the preparation of the original confession. The same types of rationalization are used by the Chinese as are used by the KGB, and the peculiar forms of Communist logic are common to both.

8. The Indoctrination Procedure in the Group Cell

At the time the first protocol or "confession" is signed, the prisoner is usually sullen and only half-convinced, if at all. It is at this point that the Chinese procedure diverges radically from that of the other Communist countries. The Chinese are less interested in immediate trial and punishment; they are more concerned with reforming the prisoner's thoughts and acts.

At some stage in his imprisonment the prisoner can expect to find himself placed in a cell with about eight other prisoners. If he was initially isolated and interrogated, this may be shortly after his first "confession" is accepted; but many prisoners are placed in group cells from the outset of their imprisonment. The cell is usually barren, and scarcely large enough to hold the group it contains. There may be a sleeping platform, but all of the prisoners sleep on the floor; and when all lie down, every inch of floor space may be taken up. The atmosphere is extremely intimate. Privacy is entirely nonexistent. Poor food and all of the other hardships of the prison routine are present, and a new and extraordinary hardship is added as well—the psychological atmosphere.

In societies which require a rigid conformity of belief and provide severe punishment for deviation, periods of great fear may be accompanied by widespread hysterical accusations and brutal punishments. This has been an outstanding feature of the present Communist Revolution in China. Under the pressures of the Communist demands for conformity and the fear of relentless punishment, men have turned against men and children against their parents. People compete with each other to demonstrate their loyalty to the new regime and freely accuse their neighbors of deviations or suspected crimes. The Chinese Communists have intentionally fostered this fear among the general population and use it for their own ends. Certainly, they do so in the prisons. One of their most ingenious

* A person who has finally been forced into making an absurd confession will sometimes accept the confession after the most absurd parts have been deleted, even though the remaining protocol is patently untrue.

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prison devices is that of turning prisoner against prisoner, and requiring the enemies of the regime to beat each other into conformity.

During his original interrogation, as he is urged to confess his crimes, the prisoner is told repeatedly that only when he has completely confessed his crimes and has come to realize the error of his ways can his case be settled. After he is transferred to a cell with other prisoners, it becomes clear to him what this entails. It is necessary for him to compete with other prisoners in studying, in thoughts, and in behavior until he has demonstrated to them, as well as to his jailers, that he is thoroughly "reformed" and a true adherent of Communism.

The regimen in the new cell is completely organized. The prisoners arise at a fixed hour, have a brief period for cleaning themselves, eat a frugal breakfast, and have the usual march to the latrine. Thereafter, they spend the morning in lectures, discussion sessions, and brief exercise periods. They spend the afternoon in the same sort of routine—more lectures, more discussions and self-criticism sessions. In the evenings, the discussions and self-criticism go on continuously until bedtime.

The lectures are relatively formal study sessions given by an instructor, who is either a member of the prison staff or a prisoner who is further along in his indoctrination. The textbooks are the standard books of Marxist theory.[†] The lecturer assigns topics for reading in these books. These are later taken up in "discussion sessions." Such group discussions of general topics are designed to ensure that everyone understands what he is being taught. On each point it is necessary for everyone in the group to come to precisely the same understanding, which is the one that meets with the approval of the teacher and the more thoroughly indoctrinated students. These sessions are held in the cell. Everyone is forced to participate. Attempts at nonparticipation are noticed immediately by the other prisoners, who then insist upon an expression of an opinion from the recalcitrant member and a thorough discussion and dissection of his views. Prisoners and instructors are equally assiduous at ferreting out other standard devices for avoiding commitment, such as platitudinous statements, or the mere parroting of the words of the instructors and the group without conviction. Prisoners who attempt to escape by the use of such maneuvers find themselves set upon by the other students and sharply criticized for their insincerity.

The exercise period is like that in Soviet prisons. During the earlier phase of indoctrination it usually consists of walking in the prison yard or doing calisthenics. At later stages, more advanced prisoners are permitted to play games, such as volley ball or baseball.

Further lectures and more group discussions take place in the afternoon. In addition, there are the "self-criticism" sessions, during which each prisoner is supposed to criticize his behavior in the light of proper Communist behavior and to admit all his faults. Not only one's present failures but all of one's past actions are subject to review. The biographical material from each prisoner's life history is available, and sooner or later he must review most of the items. Furthermore, all prisoners must take part in vigorous criticism of other prisoners. One is not allowed to criticize vaguely or lightly. One must criticize specific points and criticize them forcefully. The result of this is an intense outpouring of hostile accusations upon the prisoner who is the recipient of the criticism. The hostility

[†] For example, "The Communist Manifesto"; "Socialism-Utopian and Scientific"; "Imperialism—the Highest Stage of Capitalism"; "Foundations of Leninism"; "The History of Social Development"; "The History of the Communist Party of the Soviet Union (Bolshevik)."

of the group grows in intensity and continues until the uncommitted prisoner shows a genuine emotional reaction that indicates a satisfying willingness to reform.

A special aspect of the group criticism is what prisoners call "the struggle." This takes place when prisoners are undergoing interrogations while being confined to group cells. The cell group is made aware of the progress of the interrogation, apparently by direct instructions from the jailers to the group leader. When the prisoner returns fatigued after an interrogating session, the group surrounds him and "struggles" to help him with his confession. They stand around him in a group, shouting at him, reviling him, and accusing him for hours at a time, constantly telling him that he must confess all in order to be treated better. Such "struggles" are often initiated when a prisoner returns from an interrogation session wearing manacles and leg chains as a sign of his unsatisfactory performance. When the prisoner finally produces a satisfactory confession and the interrogator changes his attitude, the cell group is made aware of this also, and changes its attitude toward the prisoner to a milder one.

Another technique used is that of stopping all interrogations and instructions for a period of days and ordering the prisoner to concentrate upon writing his confession and self-criticism. During this time, he is not allowed to speak to anyone in his cell, and his cell mates do not speak to him. The effect of this is to produce anxiety and doubts in the prisoner, who continues to expand his writing in the hope that he will finally produce something which will satisfy his interrogators.

This routine of lectures, discussions, self-criticism, and group criticism goes on from morning until evening throughout the week. The formal lectures alone may occupy as much as 56 hours a week. Literally no part of the prisoner's waking life is left free.

9. The Reaction of the Prisoner to the Procedure in the Group Cell

Whether by design or by accident, the psychological atmosphere within one of these group prison cells is such that ultimately the prisoner comes to see that the only hope for a "solution to his case" lies in his complete conformity in speech and behavior to the doctrine outlined by his jailers. He also learns that he must demonstrate his zeal not merely by his own behavior but also by vigorously tearing down the defenses of many other prisoners. Fear and tension in the group are thus maintained at a high pitch, and the cell mates vie with one another in accusing, criticizing, degrading, and brutally punishing their fellow prisoners.

A prisoner newly introduced into one of these cells finds himself faced with an almost irresistible assault upon the integrity of his personality. Often he is already tired, discouraged, and psychologically whipped by the previous extraction of a "confession." Furthermore, he is usually somewhat confused about his value systems, and at least partly convinced that, by Communist standards, he is a criminal. He enters the cell as a newcomer and an unregenerate. He finds that his cell mates are all people who have "changed their attitudes." Regardless of their status prior to arrest, they all seem to regard themselves as criminals; some take pride in the fact that they were the worst criminals in the lot. He may be surprised to find that the cell leader who has charge of the discussion and criticism sessions is a former Nationalist officer, or possibly a priest, or a former high Communist official.

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The new prisoner's protestations of innocence are not accepted by his fellow prisoners. They derisively tell him that he will soon change. They all tell him that resistance is useless, that the Communist party is all-powerful, and that no one who is innocent is ever imprisoned. They promptly turn upon him and begin to "help him" in his reform. They criticize him vigorously and brutally. They point out every error in his thinking. They detect his every attempt to evade commitment and destroy it.† They do not allow protestation of innocence. Thenceforth he has no moment of peace and no shred of privacy.

The brutalities of prisoners to other prisoners are far more frequent than those of the guards. This is another interesting example of Communist legalism. The Chinese, like the KGB, have a regulation that prisoners shall not be tortured, beaten, or otherwise maltreated. Usually the interrogator and guards follow this rule. They leave physical brutality to the prisoners themselves. Amid the tensions of the group cell, prisoners can revile and degrade their fellow prisoners to an unbelievable degree. When the group decides that a prisoner is recalcitrant or reactionary, they may turn upon him and beat him mercilessly. They may deprive him of sleep, take his food away from him, spit upon him, make him stand all day, and insist that he be manacled. It is said that prisoners have even killed or seriously injured other prisoners. Occasionally the guards even intervene to protect prisoners from their cell mates. Such pressure of prisoners upon other prisoners is intentionally permitted and is interrupted only when danger to the life of the prisoner, or the policy of the prison officials, indicates that it should be stopped.

Hence, in addition to the physical discomforts inherent in this situation, the prisoner is placed under profound psychological pressure. To reiterate: Man is a social animal. His health is as much dependent upon the maintenance of satisfactory relationships with his associates as it is upon his food and drink. Even if nothing else at all were done to a prisoner, he would find it almost intolerable to be confined so intimately with seven other people who revile him and openly despise him. Some sort of psychological *modus vivendi* leading to a degree of acceptance is necessary for any man who exists in a group of other men. Absence of such an adaptation is profoundly disturbing. Added to this burden is the fact that the prisoner is a bewildered, anxious, and beaten man from the start. Furthermore, he has no privacy whatever. Every moment of his life is spent within a few inches of his fellow prisoners. There is nothing that he can do or say that escapes them. Not even his past and private life is sacred to him. Everything he has ever done or said may be held up before him. On top of this, he is physically abused, fatigued, and degraded to the point of complete collapse; but, as in the interrogation situation, he is never allowed to die and is always snatched back just before the final breaking point.

Here, again, is an intolerable situation in which no man can exist indefinitely. The prisoner must conform to the demands of the group sooner or later. Indeed, one is amazed not so much at the fact that prisoners ultimately conform as at the remarkable amount of punishment which some prisoners absorb before they do so. One would think that no man would actively resist these pressures for more than a few months; but even men who were predisposed toward conforming in the first place have been known to put up some degree of resistance for years

† Various names have been given to the tricks commonly used by prisoners to avoid commitment, such as "finding a loophole," "assuming an appearance," "spreading a smoke screen," "window dressing," etc. Each of these can become a subject for special criticism.

before finally conforming in all minor details to the demands put upon them. Even those who have a wholehearted desire to embrace Communism find themselves faced with some demands which they cannot accept, and seem to find it necessary to exhaust themselves in resisting these points before they finally "give in." It is as if the prisoner cannot accept total conformity as a solution until he has convinced himself that it is indeed inevitable.

Prisoners who enter into the cell groups may be defiant for a while but they soon learn that this brings punishment upon them, and they try some trick of ostensible compliance. This is detected, with further punishment, and rejection. Other ruses fail also. Finally, many reach a point of emotional breakdown. The mood common to this is profound depression, with crying, whimpering, and the loss of all care about personal appearance. Some prisoners become disoriented. Evidently a few have delusory experiences, but this is less common. Sometimes these emotional disturbances go on for several months, and they may recur.

In this new situation of intolerable pressure, the prisoner is again offered an attractive "way out." This attractive way out lies in the adoption of the ostensible ideals of Communism. At the expense of belaboring the point, it must be said again that the "exoteric" or "open" doctrine of Communism purports to be an espousal of the ideals of self-sacrifice, equality, peace, freedom from want, and freedom from fear, which are common to most of the major ethical systems of mankind. The prisoner is told, in effect, that the reason he is being punished is that he has failed to live up to this set of ideals. When he realizes his errors, has cleansed his thoughts, and has become a wholehearted believer, his ordeal will end. All the rationalizations of Communist logic are brought into play to make his conversion easier. From morning until night he has this drummed into him in teaching sessions from which he cannot escape.

Not only do prisoners revile and criticize each other; some of them show a sincere desire to help the new prisoner to "reform" himself. The behavior of prisoners to other prisoners cannot be seen as simply the free acting out of hostility and aggression. Intermingled with this there is a truly sincere desire on the part of some to make the new prisoner see that only by conforming and adopting the proper attitudes and beliefs can he ameliorate his situation. Some of them have sincerely adopted Communism and see themselves as actually trying to make the prisoner into a better person; others see themselves as only trying to get him to do what he must do in order to survive. In all cases this rationalization enables the prisoners to take the attitude that they are "only punishing the new prisoner for his own good." This attitude causes no difficulty for those who are Communists, or who truly regard the new prisoner as a criminal; but it is a source of great conflict for some, including some priests and missionaries, who realize that their efforts to convert the new prisoner may stem from some selfish motives on their own part, and that they have the effect of causing him to deny principles to which they themselves are dedicated. In any case, the new prisoner does become aware of the fact that there are members of the cell group who have partly concealed sympathy for him and are sincerely trying to help him. He responds to this offer of help as much as he succumbs to the constant rejection and brutality.

From time to time, he is taken out of the cell to see his interrogator for private discussions and further opportunity to confess. Private persuasion is thus added to group persuasion. The attractiveness of the "way out" is as effective in producing conversion as is the necessity of escaping torture.

The duration of the period of imprisonment in the group cell does not appear to bear any direct relation to the progress made by the prisoner in adopting Communist views. The prisoner may assume that he has been converted, but his mentors are hard to satisfy. The interrogator and the other prisoners make conversion difficult to attain. It is common practice for them to ask for a new deposition and a new "confession" from a prisoner as soon as he appears to have achieved a certain amount of "progress." This new "confession" usually goes so far beyond the previous one that the prisoner has great difficulty in accepting it. This initiates a new period of conflict and resistance on his part and starts the cycle over again. Western prisoners find it especially difficult when the interrogators ask them to confess to belonging to nonexistent espionage rings or to make other grossly invalid "confessions."

10. The Conversion

The prisoner faced with a KGB interrogation in preparation for a trial is placed in a position in which he must rationalize only a portion of his beliefs and actions in order to reach a tolerable *modus vivendi*, but the prisoner in a Chinese prison has a much more difficult adaptation; he must rationalize all of his beliefs and actions. It gradually becomes apparent to him that his ordeal may be of indefinite duration, and that there is no escape from it short of complete compliance with the demands of his captors. Sooner or later most prisoners make the necessary adaptation. They come to the point of being able to say and do the things required of them. They are able to change their thinking enough to begin to identify themselves with the values held by the prisoner group.

Here, again, the rewards of rationalization help the prisoner, just as they helped him to confess. For example, most people are not without some sense of guilt about parts of their past behavior. Such guilt, possessed by prisoners, is greatly enhanced by the criticism and accusations of their fellow prisoners. Confession, even if it is entered into with some reservations, gives a sense of relief. The feeling of "joining," "belonging," and "being accepted" by the prisoner group provides a most intense satisfaction to one who has been rejected and reviled. Nor is it always very difficult for him to accept the ostensible ideals for which the group is working. Prisoners make rationalizations such as "after all, Communism and Christianity are essentially the same thing," or others, such as "I did not think of myself as a spy, but, after all, I am a foreigner, and foreigners have done great harm to China." All evidences of "reform" and "conversion" are fostered by the patient help and teaching which the prisoner receives from some of his associates and by the approval of the interrogator.

When he finally submits, the prisoner receives a substantial reward from a feeling of acceptance and belonging. Suddenly, he has "friends." He may even be a "hero." He unites himself with the others and is buoyed up by a sense of dedication to the "mission" that they are carrying out. At this stage, he may be transferred to a "free and easy cell" where conditions are less harsh. Here he has an opportunity for reading, and he may be allowed to teach other prisoners and to take part in games. His new-found enthusiasm is abetted by recurrent "drives" that take place within the prison—drives against "hypocrisy," "waste," "graft," "corruption," and the like—all of which are fostered with enthusiastic fervor by competitions among the cell groups.

Those who have been through the Communist prison procedure often come out with the feeling that no matter how difficult it was, it was worth while. They

may even feel grateful to their mentors. They feel as if they had been destroyed, and then had been reintegrated. Some feel as if they were more "mature" than they had ever been before. This is especially true of those who had previously felt at loss for a goal in life, or who had not been committed to a set of beliefs, friendships, or an occupation. It is also true of those who have carried a heavy load of guilt about earlier behavior. In this last group, something akin to a religious "conversion" is recognizable. Such prisoners have experienced a period of degradation and intense punishment, which they find not entirely unacceptable because of their preexisting feelings of guilt and unworthiness; following this, they experience an "acceptance" and "group identification" which is more valuable to them than ever before because of the fact that they have already "confessed" and "atoned" for their sins. The previously uncommitted, and those who felt rejected by their society, may develop an exhilarating feeling of "purpose" and "belonging" which they never had before.

Even those prisoners who were previously well integrated and on good terms with their fellow men, and who were committed to certain goals and beliefs, experience a profound feeling of relief when they are finally able to make the necessary rationalizations and to join with the prisoner group. This feeling of relief probably stems from the release of tensions and restorations of body processes that occur in a man when he is finally able to make an adaptation to a very difficult environment.

Long after the prisoner has developed a willingness to conform, he continues to be exposed to an unremitting course of Communist studies. During all of his imprisonment he is denied access to any information which might contradict what he is being told. Over a period of years this combination of misinformation and absence of contrary evidence produces some areas of distorted belief in even the most skeptical.

11. The Trial

The period of indoctrination within Chinese detention prisons has been known to continue for as long as four years. A prisoner's release from the detention prison often appears to be decided upon on the basis of general policies rather than any specific aspects of his case. The release of foreign nationals is usually determined upon the basis of propaganda needs or the requirements of international agreements. Often release comes upon a prisoner quite unexpectedly. He is suddenly told that he will be freed. Within a few days he is taken before a "court," which is much like a Soviet military tribunal. There is a "judge," a "prosecutor," perhaps a few stenographers, and sometimes a "defense attorney." The prisoner repeats his confession in what he has long since learned is the proper manner. The defense attorney asks for lenience. (There are no pleas of "not guilty.") The "judge" then "passes sentence." If it has been decided to free the prisoner entirely, he is usually sentenced to a term in "prison" equal to the amount of time he has spent in the "detention prison," and then (if he is a foreigner) to deportation. The "lenient" judge then allows the prisoner to count his time in the "detention prison" as if it were "real imprisonment," and he is forthwith released. But if he is "to be punished," he will be sent to a labor camp or to some other punishment institution to begin his sentence.

12. The "Brain-Washed"

The people who have been described in the public press as "brain-washed"

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have been prisoners suddenly released after periods as long as four years in Chinese detention prisons. Such persons have appeared at the border at Hong Kong, looking calm, fit, and sane. They praise their captors, praise Communism, and damn "American imperialism." It is said that their old acquaintances are amazed, and that their political attitudes seem to have "changed completely." The fact that they praise their captors is regarded as the most amazing of all, for it is known that they have been through many horrible experiences in the course of their imprisonment. It is from this pattern of behavior that the impression has arisen that the Chinese possess esoteric and devilish methods of "thought control" which no man can resist.

A number of people called "successfully brain-washed" have been studied intensively. A great deal is known about these people and what was done to them. The study of these people reveals that they possessed certain characteristics in common before they were imprisoned. These can be enumerated.

1. They were people who, long before their imprisonment, were in rebellion against their parents and the way of life of the segment of society to which their parents belonged, including many of its standards, beliefs, and practices.

2. They were people who had few friends within their homeland, and no place, organization, or occupation there with which they were firmly identified. So far as their native country was concerned, they were emotionally rootless.

3. They were people who had previously identified themselves with the "under-dog." They felt a strong sympathy for all people whom they regarded as "oppressed" or "exploited," and especially for minority groups of different racial or cultural origin.

4. They all spoke Chinese fluently, and for many years had had a strong interest in China and all things Chinese.

5. Most of them were previously familiar with the exoteric concepts of Marxist socialism, and most of them had been intellectually sympathetic to socialist ideas for many years before their imprisonment. Several of them had been members of Communist and fellow-traveler groups, and at least one of them is known to have been a Party member.

6. These people had been offered repatriation after the Communist Revolution, but they had elected to remain in China, most of them primarily because they were both sympathetic to the Chinese Communist Revolution and curious to see how it would work out. They were anxious to help develop the new China, if they were allowed to do so. For months prior to the time of their imprisonment, several of them were engaged in studying Chinese Communist literature and translating it into other languages.

Most of these people were not actually Communist Party members before their arrest and imprisonment. Most of them were sympathetic to Communist ideas and to the new China, but they had not committed themselves to Communism. They had toyed with their beliefs and found them intellectually attractive, but they were content to let their identification remain at this level. They had studied Chinese, and some went to Chinese schools; but they continued to associate with the members of the Western colony, and the forms of their lives were those common to expatriate Americans and Europeans living in Chinese cities. At the time of their arrests they were still rootless, uncommitted people.

7. Nearly all of these people were arrested on charges which included "espionage." The treatment which they received in prison was that which has been described above. These people confessed to "espionage," and after their release

some of them continued for a while to state that they had been "spies." None of them had actually committed espionage, and none were actually associated with American intelligence organizations. But all of them had, with innocent intent, done various things, such as describing economic conditions in letters or discussing the morale of Communist troops with their consular officials, which were "ostensibly" espionage by Communist definition and which were forbidden by Chinese Communist law. By Communist definition, all of them were of "reactionary background" and "the agents of an Imperialist power," and they had all "committed espionage." During the course of their imprisonment, they "admitted" their acts and accepted the Communist definition of them. The rationalizations which they utilized in making their confessions were like those which have been described above.

8. To a certain extent, they were also "converted" to the acceptance of Communist doctrine. That is to say, after much soul searching and profound emotional turmoil, they committed themselves to have faith in, and to work for, some of the overt Communist ideals which they had previously accepted only on an intellectual basis. Some of them emerged from prison with a sense of purpose and worthiness which they had not felt before. They remained overtly and actively pro-Communist for periods up to several months. After that time most of them appear to have reverted to their former positions of intellectual acceptance of some Communist beliefs, while outwardly conforming to a proper middle-class life.

In summary, the study of these "successfully brain-washed" people revealed them to be persons who had previously lost their identification with the society in which they originated, and who under years of intense pressure were temporarily persuaded to "commit" themselves to beliefs which most of them already found intellectually attractive.

13. The Effectiveness of Chinese Communist Indoctrination Procedures

Just how effective are these procedures? How long-lasting are their effects? Do they actually affect brain function? Are they "irresistible"? The answer to these questions, like the answer to those about Russian "public confession" trials, is not simple, but it is available.

The Chinese prison indoctrination procedure is never more than partly effective, but it always has some effect. No human can live through months or years of this experience without suffering emotional turmoil. In order to survive and not suffer an emotional breakdown, he must make some rationalization which allows him to identify with the prison group and to relieve some of the pressures upon himself. The extent of this rationalization need not be greater than a belief that his present situation justifies his present behavior and statements. Usually, it goes further than this. He usually finds some aspects of Communist doctrine which he can admire and which he can identify with his own value systems. Also, because of his long period (sometimes years) of incarceration and exposure to propaganda, with a total absence of accurate information from the outside world, he may unwittingly adopt some Communist beliefs about current events. On some other questions, he may have at least a tentative acceptance of Communist attitudes because he has been presented with a great deal of plausible propaganda "evidence."

Thus, a man who spends a long period in a Chinese civil prison and survives

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can be expected to have experienced anxiety, despair, and doubt; he must have complied with the prison rules; he must have "confessed" to something, and he must have taken part in the various aspects of the indoctrination procedure. If the procedure was as vigorous and thoroughgoing as that described above, he must have shown enough evidence of conversion to satisfy his cell mates and jailers, and this usually means that he must have found at least some part of the Chinese Communist value system which he can identify with his own and can tentatively accept.

On the other hand, even though some of his attitudes and beliefs may have changed, his capacity to think is not altered. So-called "brain washing" produces no permanent changes in the function of the brain. Any form of imprisonment may induce a prison psychosis, and inhuman treatment may produce physical damage to the nervous system; but these effects are not peculiar to "brain washing."

Nor is there any unexplainable deficiency in the memory of former prisoners. Prisoners do not remember things which happened when they were delirious or otherwise psychotic. They may forget minor details of their experiences with the passage of time. Many of them do not wish to discuss some points of their treatment, because the memories of these are painful and the discussion of them is disturbing. But even the "most brain-washed" are capable of a vivid recollection of what occurred during their imprisonment.

Furthermore, the majority of those released carry with them an intense bitterness about some part of their imprisonment. Usually this is directed at certain other prisoners or jailers, but it may be directed at the whole Communist system. All prisoners come out with a realization that they have been cut off from the Western world for a long time, and with a suspicion that not everything in the outside world will turn out to be as it was presented to them in prison. All of them have a tentative orientation toward whatever new beliefs they may have, and most of them have reservations about their entire experience.

Upon their release, former prisoners set about a process of "reality testing." Without committing himself, each newly released man characteristically begins to talk to friends, and to listen to accounts of what has happened while he was away in prison. He begins to read back copies of books and magazines. He begins to compare what was told him with the facts as observed and reported in the American press. The available evidence suggests that within a period of months he readjusts himself to the outside world and resumes a set of beliefs roughly similar to those he held prior to his imprisonment.

Thus, it is quite erroneous to think that those who have experienced prison indoctrination in Communist China emerge as thoroughly indoctrinated Communists who express praise and admiration for their captors. Such people are as unusual as the public confessors in Russian purge trials. The vast majority of released prisoners say little or nothing. What pro-Communist beliefs they have they keep to themselves and express only in private. Many are bitterly anti-Communist. Although they are willing to admit that there are good aspects about the regime and agree that they cooperated and "confessed" while in prison, they do not have any genuine identification with Communism.

IV. Relation of State Police Procedures, Military Interrogation, and Indoctrination of Civilians and Prisoners of War in Communist Countries

In Western states the custody of prisoners of war is in the hands of the armed

forces. In the Soviet Union during the latter part of the Second World War this was not the case. In 1942 an arrangement was arrived at between the Red Army and the NKVD which gave to the army custody of prisoners shortly after their capture and during the period of field interrogation, but turned over to the NKVD the problem of their ultimate custody and utilization. The fact that the NKVD was primarily a police organization was probably responsible for the methods and attitudes which it adopted in handling the war prisoners. In the extraction of information from prisoners, it simply applied the standard secret police techniques which had found to be so effective in handling civilian prisoners during the previous 25 years. The NKVD training program rapidly produced a large body of interrogators who were proficient in speaking German. A dossier was prepared on each German prisoner of war, which included a long biographical statement from him, as well as information gathered from the interrogation of other prisoners and from captured records. This was used in his interrogation. When prisoners gave information voluntarily, no additional pressure was put upon them; but when the interrogators felt that the prisoner was withholding information, they put him through the standard isolation pressures—repetitive interrogation techniques of the NKVD.

In typical Communist legalistic fashion, the NKVD rationalized its use of torture and pressures in the interrogation of prisoners of war. When it desired to use such methods against a prisoner or to obtain from him a propaganda statement or "confession," it simply declared the prisoner a "war-crimes suspect" and informed him that, therefore, he was not subject to international rules governing the treatment of prisoners of war. This legalism later had great importance for the United States, because it was also used against American military personnel in the Korean War. We can expect that it will be used against us in any future conflict. When it signed the Geneva agreements in 1949, the Soviet Union made specific exceptions to the effect that prisoners accused of war crimes would not be protected by the code, but would be subject to the laws of the nation against whom the crimes were committed.

Thus, German prisoners of war found themselves the subjects for criminal interrogation by secret police interrogators at the will of their Soviet captors. Similarly, they found themselves exposed to the same type of treatment that the Soviets provide for civilian political prisoners. The officers were separated from the enlisted men, and the enlisted men were utilized as a source of labor. Those prisoners who lived together in camps were also exposed to the type of indoctrination which the NKVD had developed for civilian prisoners according to the Communist philosophy of "rehabilitating" prisoners by "education and healthful work." This indoctrination consisted of lectures on Communism and group-discussion sessions, using the standard Marxist texts. The prison camps were infiltrated by large numbers of informers, who created internal dissension among the prison group and prevented the development of any organized resistance. In spite of this, the indoctrination program does not seem to have been outstandingly successful. It is estimated that only some 10% of German prisoners of war developed any sympathy for Communism, although many more cooperated with the Russians in order to secure better treatment. This proportion of successful converts is not especially high when one considers the fact that Germany had a large and vigorous Communist party before the advent of Hitler. The German army must have contained a fairly large number of men of underlying Communist sympathies.

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Against the Japanese, the Russians used methods which were essentially the same as those which they used against the Germans, and with perhaps equal success. It is noteworthy that during the period 1945-1946 the deliberately increased the hardships and neglect within their prison camps, and thereby caused the death of a large number of prisoners they then held. Their policy was as much one of extermination as of conversion, but a higher proportion of those who were cooperative or converted survived because of the better treatment which they received.

The conversion of POW's always played a much greater role in the Chinese Communist military program than in that of the Soviet. It has been said that the Chinese Communists looked upon the entire Chinese nation as potential converts. They made their conversion and indoctrination program one of the most important aspects of their revolutionary effort. In 1943 this program was placed in the hands of Liu Shao-Ch'i, who was responsible for the form which it took thereafter. The conversion program within the Chinese prisons, which we have previously described, was developed out of the program which Liu Shao-Ch'i developed for use against the population in general.

Every prisoner or potential convert who fell into the hands of the Chinese Communists was evaluated on the basis of his life history, class background, education, and abilities. Those with revolutionary sympathies who possessed the proper background and abilities (especially students, intellectuals, and some proletarians and peasants) were trained to become Communist activists. These are the people whom the Communists commonly refer to as "cadres," both individually and in groups. For the purpose of the cadres' training, schools were set up offering a course of one year's duration. Students who entered these schools were isolated from the rest of society. They were put through an intensive and unremitting program of study and physical work, which occupied every moment of their waking hours and left them no time for reflection. The first phase of this program consisted of "tail cutting," or the devaluation of old methods of thought and behavior and old value systems. This was accompanied by the use of the self-criticism and group-criticism techniques and by exhaustive lectures on Communism. As in the prisons, the emotional fervor of the group was maintained at a high pitch by the stimulation of intense competitiveness and the organization of "moves" and "drives" of one sort or another with "voluntary participation," from which no student could shrink because of group pressure. An atmosphere of fear was created by the occasional disappearance of students who were doing poorly, accompanied by rumors about their imprisonment or transfer to labor battalions.

In many respects the atmosphere within these training schools paralleled that within the prisons. Under the relentless pressure of hard work, fatigue, increasing demands, group pressures, criticism, doubts, and ridicule, the majority of students ultimately reached the point at which they went through an emotional crisis associated with tears and depression. At this point some dropped out, but most found themselves able to make the necessary adaptation by reorienting their value systems and identifying themselves with the Communist group. A religious fervor and a feeling of "conversion" frequently accompanied this emotional breakdown and recovery. His new Communist fervor and group identification continued as long as the student remained an active member of the class group and often later in his party group, but it is said that a fair proportion of students

suffered from one or more relapses of tears and doubts. It is known that some defected later when the opportunity presented itself.

In the population at large, the Chinese Communists have not been able to carry out indoctrination in nearly so tightly organized a fashion, but their approach has been essentially the same as their approach to the cadres. They aim their indoctrination primarily at the younger groups and carry out their programs with a special vigor in the schools and universities. Villages have been exposed to propaganda and a certain amount of lectures and teaching. Group-discussion and self-criticism sessions have been held. These are accompanied by an attempt to devalue the old practices and substitute the Communist value system. An atmosphere of fear produced by liquidations, arrests, and accusations is exploited. All of this has had the effect of producing superficial conformity and acquiescence.

Americans have had firsthand experience with the Chinese methods of indoctrination of prisoners of war. These methods have been made the subject of exhaustive studies by the Army and Air Force and by the Defense Advisory Committee on Prisoners of War. We shall not attempt to add to their voluminous documentation. However, we may consider briefly the experiences of our prisoners in the light of what we know about Russian and Chinese practices in general.

It is evident that the North Koreans were ill prepared to cope with American prisoners from any point of view. They possessed very few English-speaking interrogators and had no prepared facilities for the semipermanent custody of prisoners of war. Much of what appeared to be calculated brutality and deliberate extermination on the part of the North Koreans and the Chinese Communists in the winter of 1950-1951 was probably the result of lack of facilities, the breakdown of supply and communication, and callousness of Oriental peasant soldiers. The initial demoralization of American prisoners by the physical hardships of their captivity was probably not intentionally designed. Attempts to indoctrinate American prisoners were poorly organized and ineptly carried out when compared with the procedures used by the Chinese on their own populace. All too often the lecturers were absurdly ignorant of American conditions. The preparation of dossiers on individual prisoners was not nearly so thoroughgoing as that employed by the Soviets or by the Chinese in their own prisons. But the use of informers among the prisoner group and the isolation and removal of natural leaders were relatively successful in demoralizing the prisoners and in preventing the organization of active resistance groups.

The Chinese used the technique of accusing American prisoners of "war crimes" when they wished to expose them to a "criminal interrogation" with the aim of obtaining a propaganda confession, or when they wished to mete out some "appropriate" punishment to a marked man. This device was primarily used in obtaining bacteriological-warfare confessions from the aviators captured during the period of 1952-1953. All told, 78 aviators are known to have been exposed to such interrogation within North Korea. Of these, 38 "confessed," and 40 did not. The methods used in obtaining these confessions were similar to those used in the Chinese-Soviet prisons. They were characterized by a striking, and often extreme, degree of physical brutality. These officers were isolated, sometimes in unheated huts or water-soaked holes in the ground. They were deprived of sleep, food, warmth, and exercise. They were insulted, threatened, beaten, and repeatedly interrogated, and they were intermittently offered kind treatment if they assented to the demands of their captors. One gains the im-

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pression that a good deal of this brutality, which included such things as mock firing squads, dousing prisoners with water in subzero weather, and the incarceration of men in small boxes, was simply a result of lack of sophistication and callousness on the part of the North Korean interrogators. Also, brutality was precipitated by the exasperating resistance of many of the prisoners. These men were being asked to confess to something which they knew to be palpably untrue, and there was no way of looking upon it in any other fashion. It is notoriously difficult to get men to make such confessions.

The resistance of these prisoners appeared to bear no direct relation to the amount of physical pressure put upon them by their Communist captors. Some men were brutalized for months without giving in; others succumbed almost immediately, sometimes with scarcely as much as a threat. Statistical correlations made by research groups of the U. S. Air Force indicate that resistance did not correlate with rank, education, religion, geographical area of origin, length of service, or regular or reserve status. The information from our own studies suggests very strongly that resistance or nonresistance is related to highly personal factors involving motivations, value systems, character structure, and the circumstances of imprisonment.

The available information all points to a readily understandable explanation for the defection of those few Americans who elected to remain in Communist lands. Nearly all of these men were of limited schooling and experience. It appears that few of them had any real interest in Communism. They defected primarily because they were afraid to be repatriated. Most of them had been regarded by their fellow prisoners as informers and collaborators, and they all had good reason to expect charges to be preferred against them if they returned to the jurisdiction of the United States. They were lured into defection by what amounted to rosy promises of further education and economic betterment if they went to China. When it turned out that their situation in China was far less rosy than they expected it to be, some were sorely disappointed and returned to the United States.

It is not the purpose of this paper to discuss the behavior of our prisoners of war. This has been dealt with ably in publications of the U. S. Army and U. S. Air Force, and in the report of the Defense Advisory Committee on Prisoners of War. Suffice it to say that in every case that has been investigated, the statements and behavior of the men have been found to have a readily understandable basis.

V. Some Theoretical Considerations

A central theme of this paper has been the proposition that there is no need to assume that the Communists utilize occult methods in managing their prisoners. The results obtained are readily understandable on the basis of the methods known to be used. Theory has been avoided, because many present-day concepts of human behavior are still in a formulative state. Notwithstanding this, there is a sufficient body of evidence to allow us to state that we understand why the results obtained flow from the methods used.

It is helpful to consider the individual man as a living system entirely dependent upon maintaining a satisfactory relationship with his total environment. A man's life is dependent upon his ability to maintain a satisfactory body temperature; a satisfactory intake of food, fluids and air; a satisfactory elimination of waste products, and a satisfactory amount of rest and activity. It is equally necessary for him to maintain a satisfactory relationship with the other human beings in his

environment, and especially with those humans who by kinship or long association have acquired a special meaning for him.

When any of these necessary relationships between a man and his environment are disturbed, there develop within him feelings which are unpleasant, and which stimulate him to take whatever action is necessary to bring them to an end. Among these unpleasant sensations are hunger, thirst, fatigue, sleeplessness, excessive warmth or coldness, and all sorts of pain. These sensations originate within the human body as a result of disturbances of bodily processes. There are other unpleasant feelings, such as anxiety, fear, anger, loneliness, sadness, and dejection, which arise out of disturbed relations to the total environment and the people in it. When beset by these feelings, man is strongly motivated to make whatever adjustments in his relation to his environment are necessary.

The Communist arrest-imprisonment procedure has the effect of seriously disturbing man's total relation to his environment. It produces many disturbing and unpleasant sensations within him. In the description of the procedures of arrest, isolation, interrogation, and torture, it was mentioned that these produce anxiety, fear, tension, resentment, uncertainty, loneliness, boredom, fatigue, sleeplessness, hunger, coldness, and pain.

When men are put into situations which produce pressures similar to those produced by the Communist imprisonment situation, many follow a similar pattern of reaction. The first part of this reaction is a period of patient and purposeful exploratory activity. The man carefully tries every possible solution to the situation which may relieve him of the pressures upon him. If one arranges the experimental situation so that the man cannot find a satisfactory solution by his exploratory activities, his next reaction is an increasing and random exploration, with a general increase of motor activity and an overflow of this activity into other behavior, of a nonpurposive nature. He appears to "become excited" and shows evidences of anxiety, hyperactivity, and sometimes panic. If the pressures of the experimental situation are continued, the hyperactivity of the subject will gradually subside, with the exception of isolated repetitive acts. He may settle upon one form of response, which he repeats endlessly and automatically, even though this endlessly repeated action can never produce a solution. If the pressures are continued long enough, his ultimate response is one of total inactivity. He becomes first exasperated, and finally dejected and dependent upon anyone who offers to help him. He becomes unusually receptive to approval or human support.

For want of a better term, the experimental situation just described has been called a "situation of frustration." Situations of frustration are the common denominator of many of the Communist prison experiences. The reaction of the prisoner to the isolation routine closely reproduces that which occurs in an artificially frustrating situation. It is a more all-embracing reaction, slower in its development and more devastating in its effects, but it is basically similar. Situations of frustration also occur in the interrogation situation, where the prisoner must prepare a satisfactory confession and finds that no matter what he does or says he cannot satisfy the interrogator. Likewise, situations of frustration occur again and again in a group cell in the Chinese prison. Here also the prisoner finds that no matter how much he attempts to comply with the demands of the interrogator and the other prisoners, his confession is never satisfactory, and his ordeal is renewed. Much the same situation occurs in the training schools for Communist cadres, where there are increasing demands for more thorough study, more work, more en-

thusiasm, and more self-criticism, until the student ultimately breaks down, showing emotional reactions, such as crying and behavior of hopelessness and despair.

Thus, all of the Communist interrogation and indoctrination programs have much in common. In all of them the subject is faced with pressure upon pressure and discomfort upon discomfort, and none of his attempts to deal with his situation lead to amelioration of his lot. Psychiatrists may refer to a man in such a situation as "emotionally bankrupt." Some of the patients who seek the help of psychiatrists are in a similar state. The pressures and convolutions of their lives have reached a point at which they can no longer deal with them, and they must have help. It is recognized that such a state of "emotional bankruptcy" provides a good opportunity for the therapist. Indeed, there are therapists who are of the opinion that successful psychotherapy is rare unless a patient has reached such a state of readiness. This appears to be a recognition of the fact that a man will not turn to a therapist for help as long as he feels that there are other means of deliverance.

When a man is at the "end of his rope," he accepts avidly any help that is offered. In the experimental situation of frustration, the subject who has reached this stage will readily accept suggestions for solving the experimental problem, however absurd. His response to words of encouragement is striking. His own intense needs have prepared him to accept suggestions which he previously would have rejected. Similarly, the patient who has reached a point of desperation may abjectly put himself into the hands of a psychiatrist toward whom he has previously displayed contempt and hostility, and he will enter into a course of treatment, however painful it may be.

A characteristic of those who are "bankrupt" and need help is their need to talk. They obtain deep satisfaction simply from unburdening themselves to another human being. In Communist prisons this need to talk is greatly fortified by the regimen of total isolation. This is an important reason why the Communist interrogator, being the only man to whom the prisoner talks, is in such an advantageous position for obtaining information from him. The interrogator is dealing with a man who might be looked upon as an intentionally created patient; the interrogator has all of the advantages and opportunities which accrue to a therapist dealing with a patient in desperate need of help.

Although the Communist management of prisoners was not designed by psychiatrists or neurophysiologists, and those who carry out this management do not have formal psychological training, nevertheless the interrogator does deal with the prisoner by using many of the same methods which the physician uses in the management of his patients. He allows the prisoner to talk at length about his family and his life. This produces in the prisoner a warm and dependent relationship toward him. The interrogator approves and rewards proper attitudes and behavior, and disapproves and punishes improper attitudes and behavior. Because of his dependence upon the interrogator, the prisoner develops an intense desire to please him. The prisoner glows when he is rewarded, and is deeply disturbed when he is rejected.

The interrogator has in his hands knowledge of most of the life history of his victim. He does not hesitate to pick out from this history the disturbing and unpleasant episodes. He uses them as a lever to humiliate the prisoner and to increase his feelings of guilt and unworthiness. The potent effect which this procedure can have upon man has been demonstrated many times in the laboratory. It has been observed that when threatening episodes from a patient's life are introduced by the

physician and discussed intensively with indications of disapproval, the patient may be greatly disturbed. Not only are his mood and behavior disturbed, but profound and potentially dangerous alterations in his bodily processes occur also. Thus, the power which the interrogator possesses in dealing with the prisoner is great; his ability to manipulate both the physical and the interpersonal aspects of the prisoner's environment place his victim in a highly vulnerable position.

It is readily understandable that the prisoner ultimately adopts the suggestions of the interrogator with regard to the protocol. It is not at all incomprehensible that some prisoners can be carried to the point of confessing to crimes for which death is the certain punishment. Since the intimate interpersonal relation between prisoner and interrogator continues through the period of the trial, it is also understandable that prisoners may continue to play their prescribed roles before the judge and the state prosecutor.

The situation within the group prison cell in the Chinese prison is akin to that of the interrogator and prisoner. Here, the important relationship is between the prisoner and the group, with the prisoner striving to gain the acceptance of the group and to identify himself with them. In this setting the pressures are more prolonged and the situation of frustration may be repeated many times, because the prisoner is called upon not only to accept a protocol or confession but to adopt a whole new attitude. It may take a long time before such a state of utter defeat is achieved; but when it is, the prisoner's reaction has many of the features of a religious conversion.

Those who have experienced a true religious conversion maintain their new attitudes and behavior for an unpredictable length of time. It has been a general experience that most of the religious conversions experienced at camp meetings or revivals are of evanescent nature. The experience is a powerful one, but the convert usually reverts to his former patterns within a short time. But this is not necessarily so. Some religious conversions have long-lasting, or even permanent, effects. So it appears to be with the conversion which takes place in Communist prisons or indoctrination schools. Those who go through the experience often feel that it was unpleasant but worth while. Its effects upon their attitudes and behavior are usually evanescent. They disappear within a few weeks after the convert is removed from his Communist environment. But a small proportion of converts appear to experience long-lasting, or even permanent, changes in their attitudes and behavior, especially if they are among the "most susceptible group."

VI. Epitome

The methods used in Communist countries for the interrogation and indoctrination of persons regarded as enemies of the state have their roots in secret police practices which go back for many years. These methods have been refined and systematized by much use and experience. Data about these procedures have been collected and analyzed. The general dynamic features which underlie them are understandable.

Those who live in Communist states recognize that at times the state police are almost unlimited in their power and their action may be swift and arbitrary. When residents of such communities become aware that they are suspected by the police, their feelings of impotence and uncertainty are greatly augmented. As they are increasingly avoided by their friends and associates, they feel isolated

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and rejected, and develop intense anxiety, often colored by feelings of guilt. Their sudden seizure under dramatic circumstances is additionally traumatizing. They usually enter upon their prison experience feeling fearful, vaguely guilty, helpless, and completely uncertain of their fate.

When the initial period of imprisonment is one of total isolation, such as that used by the KGB, the complete separation of the prisoner from the companionship and support of others, his utter loneliness, and his prolonged uncertainty have a further disorganizing effect upon him. Fatigue, sleep loss, pain, cold, hunger, and the like augment the injury induced by isolation. The cumulative effects of the entire experience may be almost intolerable. With the passage of time, the prisoner usually develops an intense need to be relieved of the pressures put upon him and to have some human companionship. He may have a very strong urge to talk to any human and be utterly dependent upon anyone who will help him or befriend him. At about this time he also becomes mentally dull and loses his capacity for discrimination. He becomes malleable and suggestible, and in some instances he may confabulate.

The interrogator exploits the prisoner's need for companionship. He uses items from the prisoner's biography derived from police files, from the prisoner's associates, and from hours of interrogation to arouse further guilt, conflict, and anxiety. He makes use of the dependence of the prisoner, which is strengthened by the intimate sharing of information about his life. He frustrates and further disorganizes the prisoner by rejecting his statements. He scolds, punishes, and threatens him when he does not cooperate, and approves and rewards him when he does. Then, by suggesting that the prisoner accept half-truths and plausible distortions of the truth, he makes it possible for the prisoner to rationalize and thus accept the interrogator's viewpoint as the only way out of an intolerable situation.

The methods of interrogation and indoctrination used in Communist China are in many respects similar to those of the Russian state police, from which they were in part derived; but in some respects they are quite different because of the special needs and traditions of the Chinese. In the Chinese prison, the individual interrogator is still important, and in occasional cases the management of the prisoner may quite closely duplicate that of the KGB. But in most instances the efforts of the interrogator are supplemented by the effects of the interaction between the prisoner and six or eight of his fellow prisoners with whom he is incarcerated in a crowded cell. Here the group replaces the interrogator as the focus of the prisoner's relationships. In this setting of complete lack of privacy, there is an unrelenting routine of self-criticism sessions, group-discussion sessions, rote learning, constant repetition of Communist viewpoints, and the repeated rewriting and rejection of autobiographical essays. The group exploits the feeling of emotional nakedness and unworthiness which the self-criticism sessions engender, dwelling upon items obtained from the prisoner's life history during these sessions which arouse in him guilt, conflict, and anxiety. These feelings are greatly potentiated when the group rejects, isolates, and reviles him because of his "improper" attitudes and past behavior. The prisoner is thus placed in a situation in which he cannot avoid having his past life reviewed and questioned and cannot avoid hearing an exposition of the Communist position. Moreover, for a period, sometimes of years' duration, he has access to nothing but Communist-oriented history and Communist inter-

pretation of current events. Like the KGB interrogator, the group rewards and approves the prisoner when he cooperates and behaves in accordance with their aims, and thus indicates to him that the only possible solution to an intolerable situation is the acceptance of the "proper" point of view.

Under pressures such as these, prisoners usually rationalize a change in attitude and hold it for an indefinite time. In general, this change in attitude is only so great as the prisoner feels it must be to enable him to relieve himself of the intolerable pressures under which he labors. In the KGB pre-trial interrogation, the achievement of a successful rationalization and a satisfactory protocol is usually accompanied by a profound feeling of relief, and an unspoken agreement with the interrogator that may even have overtones of warmth and friendliness. In the Chinese group cell, where the pressures are much more prolonged and the demands upon the prisoner are correspondingly more intense, the ultimate achievement of a proper rationalization and group acceptance is associated with feelings of relief that are occasionally exhilarating, and sometimes show some of the features of a religious "conversion."

Men under the complete control of Communist police have been made to say and do many things which their captors desire. Some people have proved to be much more malleable than others; but even under the most strenuous circumstances some men are remarkably refractory and refuse to cooperate with their captors up to the point at which they develop confusional states and delirium. The most effective features of the Communist procedures are those which would operate even in the absence of control. Prisoners who were not excessively abused and who encountered men who appeared to be dedicated, selfless, and even "idealistic" in their attachment to the ostensible goals of Communism have acknowledged these features of their captors; and those who were presented with plausible evidence have accepted it tentatively. When they have discovered that they would be rejected, reviled, and punished for non-cooperative behavior, they have refrained from doing or saying anything which would bring such abuse upon them when they were in Communist control. Those whose past lives have been colored by feelings of much guilt, by lack of purpose or commitment, and those who were previously sympathetic to Communist views have been more amenable to the Communist methods.

Prisoners who have been released from Communist control and have been able to assure themselves that they will no longer be punished for "improper" opinions have gradually readjusted their attitudes to their new environment. Their memories of the punishments and brutalities which they have endured have been lively. For most prisoners these memories override all others. When they have felt safe to acknowledge their resentment, they have expressed extreme hostility toward those responsible for their bad prison experiences, and they have nearly always rejected Communism and all those connected with it.

Course of Exacerbations of Multiple Sclerosis in Hospitalized Patients

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Multiple sclerosis is a disease characterized by exacerbations and remissions. While various factors, such as psychic or physical stress, operations, or anesthesia, have been propounded as possible precipitants in bouts of this disease, little has been linked with remissions except "rest." The occurrence of remissions has been the basis for the many proposed therapeutic measures, but spontaneous improvement has been assumed to be the mechanism in effect when early results were not confirmed.

It is the purpose of this paper to investigate factors possibly associated with such spontaneous improvement, with the goal of discovering the course of attacks in groups of patients, and any features of the bout which may be of prognostic value.

Methods and Material

At the Bronx VA Hospital over 300 patients were hospitalized between 1944 and 1953 for whom the diagnosis of multiple sclerosis was entertained. Of these patients, those were omitted for whom the data for diagnosis were insufficient or another disease was likely. The essential criterion for diagnosis was the neurologic evidence of multiple lesions, in time or space. Two hundred twenty patients were considered to have multiple sclerosis. All but one were male, and there were only six Negroes.

These patients were divided into two groups (A and B), according to the duration of the episode leading to admission. The onset of the present episode was defined as the start of the dysfunction which led to admission, being either an attack *de*

novu engrafted on a "well" patient or on one whose dysfunction had stabilized, or the start of a definite acceleration in the decline of a patient with chronic progressive disease. Most attacks were plurisymptomatic, and many were marked by fluctuations in intensity of one or more symptoms; but in timing the episodes, fluctuations were ignored, so far as possible, and only symptoms present upon admission were considered. No symptom unsupportable on neurologic examination was included.

Group A consisted of 175 patients whose present episode was of two years' duration or less before hospitalization.* These patients had an average (mean) age of onset of 27.6 years. Their mean age at admission was 32.1 years; hence the average total duration of illness was 4.5 years. The mean duration of the present episode was 182 days, and the average hospital stay was 104 days; hospitalization was terminated when a patient had stabilized for two to four weeks, with rare exceptions.

Group B was composed of 45 patients the duration of whose present episode exceeded 2 years before admission and averaged 4.5 years. The mean age of onset was 28.5 years, and the mean age of admission was 38.1 years, with an average total duration of the disease of 9.6 years. The mean period of hospitalization was 7.7 months, but many of these patients were thereupon transferred to chronic disease hospitals.

Therapy for all patients consisted of general diet and bed rest at will, although there were short periods when all patients were ordered to bed upon admission. At different times nicotinic acid, histamine, or cyanocobalamin U.S.P. (vitamin B₁₂) was administered. Most patients received oral multiple vitamins. Intercurrent diseases were treated by appropriate measures.

All patients were classified upon admission and discharge according to a scale* consisting of 10 progressive categories (0-10), designed to measure

*Although the dividing line between the two groups was "two years," this was based upon patients' reports, and the durations ranged possibly from 22 to 26 months. Often the date of onset for episodes of more than 18 months' duration could not be defined precisely, whereas short attacks were nicely delimited. As may be seen below, this lack of precision in long episodes did not alter the results.

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maximal function as limited by objectively definable defects attributable to this disease. The higher the status number, the greater was the dysfunction. For example, inability to walk unaided was included in Categories 6 and higher.

Improvement was herein defined as a gain of one or more of these categories between admission to and discharge from the hospital.

In addition to these ratings, the following data were gathered in each case: date of admission and discharge, days hospitalized, age on admission and at onset, duration of present episode (exacerbation) and of total illness, number of attacks, number of full and of partial remissions, sex, race, later attacks by number and type in hospital, length of follow-up (where done), type of therapy, admission blood pressure, any abnormality or disease on general examination, complications during hospitalization, and usual laboratory data plus (in many) electroencephalogram and lumbar puncture. The neurologic status was also recorded on admission, discharge, and follow-up on a 0 to 5 scale for each of these types of disorder; pyramidal, cerebellar tract, brain stem, sensory, bowel and bladder, and others (miscellaneous plus cerebral, including optic).

Results

General Observations.—No patient in Group B improved. Eight (18%) became worse, and 31 (82%) were unchanged in hospital. In order not to obscure any factors possibly correlated with improvement, this group was omitted from further analysis; it was felt such factors would be more evident when sought for in those who had demonstrated a potential for improvement.

In Group A, improvement was found in 58 patients (33%); 88 patients (50%) showed no change, and 29 (17%) became worse during hospitalization. Three patients (one in each course) were omitted from later calculations, owing to insufficient data. For those who improved, the median gain was two categories,² and the mode, one category. The upper limit of the per cent improved, at the 99% confidence band, was 43,³ signifying that there was less than 1 chance in 100 that more than 43% of a similar group would improve.

Of these 172 patients, 54 were seen again for periods of up to 2 to 80 months

after discharge, with an average of 17 months. Of the 21 of these who had improved in hospital, 24% showed further improvement, 33% maintained their discharge status, and 43% had worsened since discharge. None of the eight patients who worsened in hospital later improved; five remained at discharge status, and three had worsened. Only 3 (12%) of 25 who manifested no change in the hospital later improved; 5 remained stable, and 17 (68%) worsened after discharge. Therefore, when patients who improved in hospital were considered versus those who did not, this sample suggested there would be an error of but 6% (3 of 54) in the number who improved from the exacerbation for which they were hospitalized. In reference to the hospital course, the distribution of the follow-up patients (39% improved, 15% worse, 46% unchanged) was the same as that of the entire Group A.

Correlations.†—1. During the decade in question (1944-1953) the annual incidence of improvement for the patients who comprised Group A revealed no significant deviation from the mean noted above. The range of the per cent improved was 13 to 50. In this respect, there may be noted, aside from the uniformity from year to year, the apparent lack of efficacy of rehabilitation procedures in altering the results, as these results were defined above. Physical medicine procedures were little used for these patients before 1950, when a rather intensive program was instituted and continued to the present. It should be noted, however, that most patients were not offered this therapy until their condition had largely stabilized.

2. Improvement or lack of it could not be correlated with the clinical type of impairment. Almost all patients showed combined dysfunction; 88% of patients manifested pyramidal tract disorder and

†The statistical bases for the following statements will be found in the Appendix.

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78% cerebellar ataxia, but sphincter involvement, the least common (excluding the "other" class), was found in 48% of the patients. In the six aforementioned types of impairment there were, among the 172 patients in Group A, 685 signs with or without symptoms and in varying degrees, or an average of four "systems" involved per patient. The incidence of various systems involved did not differ significantly between those who improved and those who did not. Of these signs 129, or 19%, remitted. There was no significant difference for the improvement among the types of impairment, except for sphincter disturbances, which showed fewer remissions, with but 10% improved ($P < 0.05$). Sphincter involvement was not found alone in this series, but was always combined with one or more other "systems."

However, even in the 57 patients who had remissions, not all signs improved. These patients also exhibited 62 signs which remained unchanged and 2 (one pyramidal, one sensory) which worsened, so that but two-thirds of the signs improved in these patients. Of the signs in these 57 patients, the cerebellar ataxia improved in 33 of 38 instances, significantly more frequently than the rest of the signs.

While, then, there was some variation in the signs which remitted, the course of a patient showed no such correlation, since he was afflicted with dysfunction in an average of four different systems.

3. Similarly, there was no correlation with the prior character of the illness. For those who had never had a remission before admission (40 patients), 12 (30%) improved, 7 (18%) worsened, and 21 (52%) were unchanged. Of the 132 patients (77% of the total) who had had at least one remission, 46 (35%) again had remission from the attack in question, while 21 (17%) became worse and 65 (49%) showed no change in the hospital. Further subdivision of the latter group into those with one or two pre-

vious remissions and those with more than two again revealed no significant difference; there was improvement in 30% of the former class (25 of 84) and in 44% of the latter (21 of 48).

4. The severity of the disease upon admission was of no value in prognosis. Twenty-nine per cent of 21 patients admitted as Status 2 or less (minimal disease) improved; 35% of 96 admitted in Categories 3 through 5 (moderate), and 31% of 58 patients from Category 6 through 9 (severe disease) improved while in hospital.

5. There was no correlation of improvement with the age of the patient on admission or the age of onset of multiple sclerosis. For those who improved, the mean age of onset was 28.1 years and the age on admission 32.1 years. The patients who became worse had a mean age of onset of 26.6 years and were at admission 32.1 years of age. The unaltered patients showed a mean age of 27.8 years at onset and 32.2 years upon admission. When the course in hospital was correlated with each of these ages (in consecutive five-year periods), there was no significant deviation from the mean of all patients (Table 1).

TABLE 1.—Course in Hospital of Patients with Multiple Sclerosis Classified According to Age

| Age Groups (Five-Year Periods) | Improved No. | Improved % | Worse or Unchanged, No. | Total No. | Ap* |
|--------------------------------------|-----------------|---------------|-------------------------------|--------------|-------|
| A. Age on Admission to Hospital | | | | | |
| 15-20 | 1 | 33 | 2 | 3 | 0.33 |
| 21-25 | 13 | 35 | 24 | 37 | 4.57 |
| 26-30 | 17 | 36 | 30 | 47 | 6.14 |
| 31-35 | 10 | 31 | 22 | 32 | 3.12 |
| 36-40 | 8 | 30 | 19 | 27 | 2.37 |
| 41-45 | 3 | 30 | 7 | 10 | 0.90 |
| 46-50 | 2 | 22 | 7 | 9 | 0.45 |
| 51-55 | 1 | 33 | 2 | 3 | 0.33 |
| 56-60 | 2 | 67 | 1 | 3 | 1.33 |
| Total | 57 | 33 | 114 | 171 | 19.54 |
| B. Age at Onset of First Episode | | | | | |
| 15-20 | 7 | 37 | 12 | 19 | 2.58 |
| 21-25 | 18 | 31 | 40 | 58 | 5.58 |
| 26-30 | 16 | 36 | 29 | 45 | 5.68 |
| 31-35 | 9 | 36 | 16 | 25 | 3.24 |
| 36-40 | 4 | 25 | 12 | 16 | 1.00 |
| 41-45 | 1 | 17 | 5 | 6 | 0.17 |
| 46-50 | 2 | 100 | 0 | 2 | 2.00 |
| Total | 57 | 33 | 114 | 171 | 20.25 |

* Ap will be used below in the statistical tests; see Appendix.

6. Improvement showed no correlation with either the month of admission for all patients in Group A or the month of onset of acute attacks; correlations for the latter were calculated for episodes lasting six months or less, and also for episodes of two months or less prior to admission.

Of these three classes, only the onset of attacks of two months or less before admission revealed any notable variation from an equal distribution of patients in each month of the year, 28 such episodes beginning in the summer months (June, July, August) and 14 in the winter (December, January, February); spring and fall were represented by 21 and 22 such attacks, respectively. However, even this variation proved to be not significant.

7. Electroencephalograms were made on 81 patients in Group A, and 40% were abnormal. There was no deviation of significance from this figure in the patients whose course improved, became worse, or was unchanged. One patient who improved had an abnormal record on both admission and discharge; two patients who worsened had records which changed from normal to mildly and diffusely abnormal. There were no other serial tracings.

8. Lumbar punctures were performed upon admission in 123 patients. An abnormal fluid was characterized herein as one with any of the following findings: protein above 45 mg. per 100 cc., leuco-

cytes above 10 per cubic millimeter, colloidal gold curve with figures above 2, Lange D curve.† With these criteria, 56% of patients had an abnormal cerebrospinal fluid. There was no variation of significance from this figure for those in each clinical course (improved, worse, unchanged).

There were six patients who improved who had at least two lumbar punctures in hospital: The one normal fluid became abnormal; two patients with abnormal findings later had normal fluids, but the others showed no change in the abnormalities. In the patients who worsened, the three paired fluids (two of which were normal on admission) all showed abnormalities of the second specimen. In the four unaltered patients, who had repeated lumbar punctures, only one of the four originally abnormal fluids reverted to normal. Therefore, in this small sampling, serial spinal fluids did not parallel the clinical course.

9. The course in hospital according to various total durations of the disease showed no deviation of significance from the mean of all patients in illnesses of up to 300 months' duration (Table 2). When the individual subgroups were compared with the remainder of the patients, again there was no difference, even at the 10% level of confidence. The *P* value was lowest (though still not significant) for durations under five months.

† Only 15 Lange gold curves (0 to 20) were done; 5 were D curves.

TABLE 2.—Course in Hospital of Patients (Group A) According to Total Duration of Multiple Sclerosis from Onset of First Bout to Admission

| Duration, ■ 1 Mo. | Improved | | Unchanged | | Worse | | Total No. | χ^2 *† | Ap* |
|----------------------|----------|----|-----------|----|-------|----|--------------|-------------|-------|
| | No. | % | No. | % | No. | % | | | |
| Less than 1..... | 6 | 60 | 4 | 40 | 0 | 0 | 10 | 2.29 | 3.60 |
| 1-4..... | 7 | 54 | 4 | 31 | 2 | 15 | 13 | 1.80 | 3.77 |
| 5-14..... | 9 | 35 | 13 | 50 | 4 | 15 | 26 | 0.01 | 3.12 |
| 15-29..... | 9 | 26 | 21 | 62 | 4 | 12 | 34 | 0.52 | 2.38 |
| 30-49..... | 5 | 24 | 12 | 57 | 4 | 19 | 21 | 0.46 | 1.19 |
| 50-99..... | 15 | 37 | 20 | 49 | 6 | 15 | 41 | 0.12 | 5.48 |
| 100-199..... | 5 | 24 | 9 | 43 | 7 | 23 | 21 | 0.46 | 1.19 |
| 200-299..... | 1 | 17 | 4 | 66 | 1 | 17 | 6 | 0.19 | 0.17 |
| Total..... | 57 | 33 | 88 | 51 | 27 | 16 | 172 | | 20.90 |

* These terms were used in the statistical analyses (see Appendix).

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TABLE 3.—Course in Hospital of Patients (Group A) with Multiple Sclerosis According to Duration of Present Episode Prior to Admission

| Duration | Improved | | Unchanged | | Worse | | Total | χ^2 ct* | Ap* |
|-----------------|----------|----|-----------|----|-------|----|-------|--------------|-------|
| | No. | % | No. | % | No. | % | No. | | |
| 0-7 days..... | 24 | 86 | 2 | 7 | 2 | 7 | 28 | 38.9 | 16.12 |
| 8-14 days..... | 9 | 64 | 5 | 36 | 0 | — | 14 | 5.22 | 5.78 |
| 15-31 days..... | 10 | 38 | 14 | 54 | 2 | 8 | 26 | 0.16 | 3.85 |
| 1.1-2.0 mo..... | 3 | 18 | 10 | 59 | 4 | 23 | 17 | 16.3 | 0.53 |
| 2.1-6.0 mo..... | 5 | 14 | 23 | 64 | 8 | 22 | 36 | | 0.69 |
| 6.1-12 mo..... | 4 | 18 | 12 | 55 | 6 | 27 | 22 | | 0.73 |
| 1.1-2 yr..... | 2 | 7 | 22 | 76 | 5 | 17 | 29 | 10.8 | 0.14 |
| Total..... | 57 | 33 | 88 | 51 | 27 | 16 | 172 | — | 27.84 |

* These terms were used in the statistical analyses (see Appendix).

10. Much more striking was the rapid decline in the per cent improved with an increasing duration of the present episode prior to admission (Table 3). From episodes of 7 days or less 86% of patients improved; 64% remitted from exacerbations of 8 to 14 days. For durations of 15 to 31 days but 38% improved. For between 1.1 and 12.0 months' duration, improvement occurred in 14% to 18% of patients, and for attacks lasting 1.1 to 2 years prior to admission, there was remission to any extent in only 7% of the patients during hospitalization (Figs. 1 and 2). This distribution departed markedly from the value of the mean, with a level of significance far beyond 1.0%.

In addition, testing of each subgroup

against the remainder of the patients for the number improved revealed levels of significance beyond 0.1%, except for two groups: For the 8-14 days' group P was 0.02, owing to small numbers; for the 15-31 days' group there was no significance, since this was the point where the curve of the per cent improved crossed the mean.

Expressed differently, a patient whose episode exceeded one month in duration before admission had but 1 chance in 6 of improving; if it had lasted more than one year, his chances dropped to 1 in 14, and beyond two years (from Group B) his chances of improvement were less than 2%.

11. The degree of remission also tended to be related inversely to the duration of the attack prior to admission.

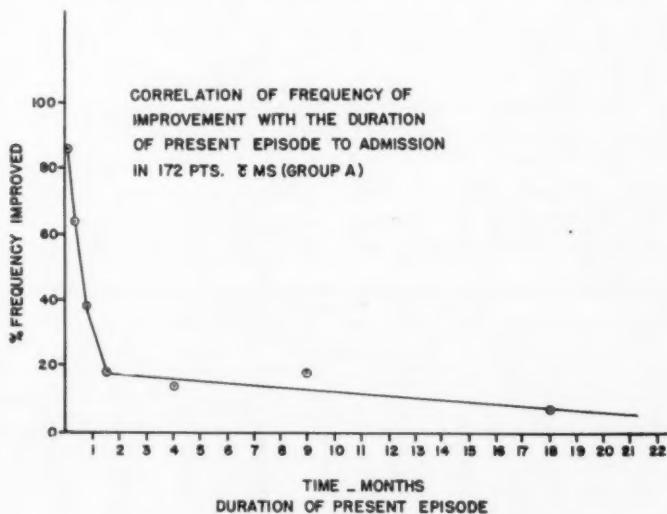


Figure 1

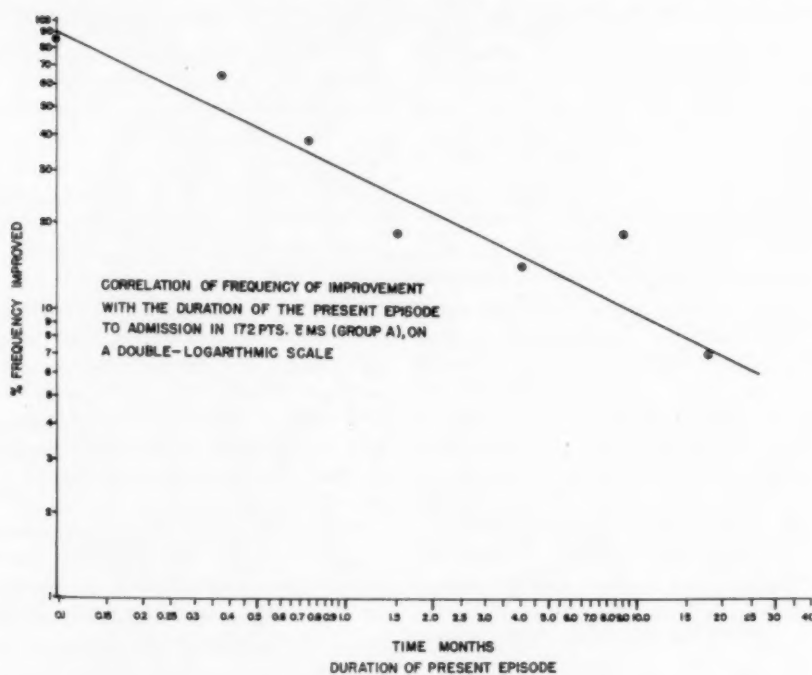


Figure 2

Of the patients who improved, 34 were discharged as of Status 2 or less (that is, with minimal or no dysfunction²), and may be considered to have had a "complete" remission. Of the 34, 31 had a presenting attack of one month or less in duration before admission. Of the 23 patients whose improved status on discharge was 3 through 7, 9 had an episode exceeding six months upon admission.

While the last three correlations indicated that the duration of the episode was of great import in estimating the

probability of improvement, and the total duration of illness of little value therefore, this did not mean that the disease was of equal severity over the years. The average patient had the same chance of improvement from an exacerbation beginning 20 years after the onset of the disease as from one starting one year after onset; however, his "base line" status was higher (more disability) with the passage of time. The per cent of patients who were disabled (unable to walk unaided; status above 5) rose from 10%, for disease of less than one month,

TABLE 4.—Distribution of Severity of the Disease on Admission and Discharge According to Total Duration of Illness upon Admission to Hospital

| Total Duration, Mo. | Status 6 Through 10* | | Total No. of Patients | | Status 0 Through 3* | |
|---------------------|----------------------|-------------|-----------------------|----|---------------------|-------------|
| | Admission No. | Discharge % | No. | % | Admission No. | Discharge % |
| Less than 1..... | 1 | 10 | 1 | 10 | 6 | 60 |
| 1-4..... | 5 | 38 | 5 | 38 | 8 | 62 |
| 5-14..... | 7 | 27 | 6 | 23 | 8 | 31 |
| 15-29..... | 9 | 26 | 11 | 32 | 8 | 24 |
| 30-49..... | 4 | 19 | 5 | 24 | 11 | 52 |
| 50-99..... | 16 | 39 | 13 | 32 | 11 | 27 |
| 100-199..... | 10 | 48 | 11 | 52 | 2 | 10 |
| 200-299..... | 8 | 83 | 5 | 83 | 0 | 0 |
| | | | | | 1 | 17 |

* Status numbers according to disability scale: Status 6 through 10 (severe disease) included all patients unable to walk unaided; Status 0 through 3 indicates no or mild abnormality.

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to 83%, for illness averaging 24 years (200-299 months). These figures were similar on admission and discharge (Table 4). Despite the small numbers in many subgroups, this distribution was significantly different (at the 5% level) from the mean.

Comment

It was found that one out of three patients improved while in hospital from an episode of multiple sclerosis which had persisted for two years or less before admission. Follow-up studies after hospitalization in one-third of this group revealed only three patients (6%) who later improved but who had not improved in the hospital. It was felt that the period of hospitalization, which averaged three and a half months and included 94% of the remissions, was sufficient for the investigation of possible prognostic features.

None of the following factors could be correlated with improvement: (1) the calendar year of admission, (2) the clinical type of impairment, (3) the prior character of the illness, (4) the severity of the disease on admission, (5) the age of the patient at onset of the disease or on admission, (6) the calendar month of admission, or, for acute attacks, the month of inception of the episode, (7) electroencephalographic and (8) spinal fluid findings, and (9) the total duration of the disease.

The only measurable factor which was found to be related with the course in hospital was the duration of the episode before admission. In this instance, however, the correlation was striking. Episodes of one week or less remitted in 86% of patients. The improvement rate fell precipitously to 38% for attacks of one-half to one month and then declined gradually, with but 7% improved when the bout was in its second year upon admission. When the episode exceeded two years, none of 45 patients improved,

and it is believed that remissions after two years are rare. Putnam⁴ reported such a remission from a bout of six years' duration. Brickner,[§] in his account of 308 symptoms, noted improvement in 38 which had exceeded two years in duration; however, many of these were classed as "recurrent" over these periods, and 25 of them were largely subjective. Of the other 13, the only major change was in an intention tremor of four years' duration. Thygesen^{||} stated that "the prospects are usually gloomy" if no improvement had occurred within six months. Müller[¶] noted an incidence of 6% improvement with episodes exceeding one year in duration. In his series, the per cent of initial symptoms which remitted completely varied from 63%-85% for a duration of one to two months, 13%-30% if they lasted three months, and 2%-10% if longer than six months.[#]

Thygesen⁷ reported improvement in 76% of attacks averaging 40 days in duration. Among his patients, those who did not improve had bouts averaging 79 days; those with partial remission averaged 39 days, those with almost complete remission 24 days, and those with complete remission 8 days. McAlpine⁹ noted an improvement rate (85%) in the initial episode which far exceeded that of the present report; the rate noted above was 30%, or, for first attacks under one year, 39%. This may be accounted for in part by the omission from this series of all first episodes of neurologic dysfunction attributable to one locus, such as a retrobulbar neuritis.

A high rate of remission has also been reported elsewhere. Fifty-nine per cent of Merritt's autopsied patients¹⁰ and 53% of Lazarte's group¹¹ had shown remissions. One reason for the discrepancy may be found in a statement by Putnam: "Some definite improvement at

§ References 5 and 6.

|| Thygesen,⁷ p. 91.

¶ Müller,⁹ p. 107.

Miller,⁹ p. 94.

some time occurred in 69% or more of 133 cases studied."* In the present series, 77% of patients in Group A had had remission or improvement "at some time," but, from the attack in question, only 33% improved.

Another measure of the rate of remission from a given attack in consecutive patients may be obtained from the reports of proposed therapeutic agents. In Putnam's review⁴ 47.5% of 1407 cases improved. Most of these were in isolated instances or small series; the largest was Brickner's group⁵ of 49 patients. Later studies[†] either reported on less than 20 patients or presented remission rates under 60%.

Therefore, from a given bout in consecutive patients with multiple sclerosis, it seems probable that 30% to 50% of the patients will improve, and that variance from these percentages is best explained by differing durations of the episode.

The end of the bout as defined herein was the date of admission to the hospital. It was certainly apparent that the sooner after onset the patient was admitted, the greater were his chances of improving. This should not be taken to indicate that hospitalization necessarily played any role in furthering remissions. Rather, it may be merely a reflection of a random distribution of exacerbations. Assume four patients at the onset of an attack which is destined to remit in one week in two patients, in four months, in one, and not at all in one. If the patients are admitted in the first week, hospitalization will have "promoted remission" almost immediately in two; but let six months elapse after onset, and the only patient still affected will enter and not improve; thus, hospitalization "has no effect in promoting remission." This may well explain in part Putnam's⁴ impression that office patients do so much better than ward patients. The average person tends to postpone hos-

pitalization, thus affording for the ambulant patient the greatest chance of remission. In this respect, VA hospitals are more likely to obtain a representative sample of the disease in all stages; these institutions do not treat outpatients, finances are not so important a factor, and, especially for service-connected patients, even minor changes in status are liable to lead to admission. Thus, the two extremes, of office practice and chronic hospital population, are avoided in large measure.

Summary and Conclusions

In a series of 220 hospitalized male patients with multiple sclerosis, no patient improved whose present episode or exacerbation had persisted for more than two years before admission.

For the 175 patients whose duration of the present episode prior to admission was two years or less and averaged six months, 33% improved, 50% had no change, and 17% became worse during a mean hospital stay of three and a half months.

The outcome of the present episode could not be correlated with the total duration of illness, the age on admission or onset, the type of neurologic involvement, the severity of admission status, the prior nature of the illness, the laboratory findings, the month or year of admission, or the month of onset of acute attacks.

Improvement or remission was inversely related to the duration of the episode prior to admission.

Eighty-six per cent of patients improved if the attack had lasted 0 to 7 days; 64% improved from episodes of 8 to 14 days' duration, and 38%, from episodes of 15 to 31 days' duration. For episodes lasting 1.1 to 12.0 months there was an improvement rate of 14% to 18%, and from episodes of 1.1 to two years, 7% improved in the hospital.

It is concluded that this relationship of improvement to the duration of the

* Putnam,⁴ p. 2491.

† References 12-18.

MULTIPLE SCLEROSIS EXACERBATIONS

episode may provide a standard for comparison and prognosis in this disease.

Appendix

Analysis of the data in this report was by four methods: (1) χ^2 test with Yates' correction for fourfold contingency tables; (2) a modification of the first, where one group was compared with the sum of the remainder of the groups in a fourfold contingency table, as in Tables 2 and 3; (3) Fisher's modification of χ^2 for contingency tables larger than fourfold but with one division twofold; (4) exact χ^2 for comparison of ratios, as in the monthly incidence of attacks. The formulas and explanation of the terms employed follow. Unless otherwise stated, "significant" means P of less than 0.01 (exclusion of 99% of chance variation to explain the differences), and "not significant" means P of 0.10 or greater.

$$1. \chi^2 \text{ (Yates): } \chi^2 = \frac{(ad-bc/-N/2)^2 N}{(a+b)(c+d)(a+c)(b+d)}$$

a is no. of "successes" in Group 1.

b is no. of "failures" in Group 1.

c is no. of "successes" in Group 2.

d is no. of "failures" in Group 2.

N is $a+b+c+d$.

P is 0.10 at χ^2 2.706; 0.05 at 3.841; 0.01 at 6.635; 0.001 at 10.827.

$$3. \chi^2 \text{ (Fisher): } \chi^2 = \frac{\sum(Ap) - p\sum(A)}{\bar{p}\bar{q}}$$

$\sum(A)$ is the sum of the A 's; A plus not- A comprise the total in any row.

$\sum(Ap)$ is the sum of the Ap 's; Ap equals $A \times A/(A + \text{not-}A)$.

\bar{p} is $\sum(A)/(A + \text{not-}A)$; \bar{q} is $1 - \bar{p}$; A is number of "successes" in any row.

n equals (rows - 1) (columns - 1); n is the "degrees of freedom" upon which P depends; that is, a given χ^2 is significant or not according to n .

$$4. \chi^2 \text{ (exact): } \chi^2 = \sum(0-E)^2/E$$

0 is the observed value, and E the expected value.

Correlation 1:

| Year | Improved | No. | Total | |
|----------|----------|----------|-------|------|
| Admitted | No. | % | No. | Ap |
| | | Improved | | |
| 1953 | 3 | 33 | 6 | 1.00 |
| 1952 | 6 | 24 | 19 | 1.44 |
| 1951 | 11 | 50 | 11 | 5.50 |
| 1950 | 7 | 24 | 29 | 1.69 |
| 1949 | 12 | 50 | 12 | 6.00 |
| 1948 | 8 | 42 | 11 | 3.37 |
| 1947 | 5 | 36 | 9 | 1.79 |
| 1946 | 2 | 22 | 7 | 0.44 |
| 1945 | 1 | 20 | 4 | 0.20 |
| 1944 | 2 | 13 | 14 | 0.25 |

57 33 115 172 21.68

χ^2 is 12.7. For n of 9, P is 0.10 at 14.68.

Correlation 2:

| Group A | | | | |
|------------|----------|----------|-------|-------|
| Type | Not | | | |
| Impairment | Improved | Improved | Total | Ap |
| Pyramidal | 30 | 122 | 152 | 5.92 |
| Cerebellar | 33 | 102 | 135 | 8.07 |
| Brain stem | 32 | 112 | 144 | 7.12 |
| Sensory | 16 | 94 | 110 | 0.58 |
| Other | 10 | 51 | 61 | 1.64 |
| Total | 121 | 481 | 602 | 23.33 |
| Sphincter | 8 | 75 | 83 | 0.77 |

Total 129 556 685

χ^2 10.66 (all); χ^2 for first five is 6.10. Sphincter vs. others is 4.57.

57 Improved Patients

| Type | Not | | | |
|------------|----------|----------|-------|-------|
| Impairment | Improved | Improved | Total | Ap |
| Pyramidal | 30 | 16 | 46 | 19.56 |
| Cerebellar | 33 | 5 | 38 | 28.65 |
| Brain stem | 32 | 15 | 47 | 21.80 |
| Sensory | 16 | 13 | 29 | 8.83 |
| Sphincter | 8 | 8 | 16 | 4.00 |
| Other | 10 | 7 | 17 | 5.88 |
| Total | 129 | 64 | 193 | 88.72 |

χ^2 11.35; excluding cerebellar, χ^2 is 2.46. Cerebellar vs. others: 7.44. P is 0.1 at 9.24, n of 5. P is 0.1 at 7.78, n of 4.

Correlation 3:

χ^2 is 0.14 for no remissions vs. previous remissions; a is 12, b is 28, c is 46, d is 86.

χ^2 is 2.05 for more than two remissions vs. one or two remissions; a is 25, b is 59, c is 21, d is 27.

Correlation 4:

| Admission | Not | | | |
|-------------|----------|----------|-------|-------|
| Status | Improved | Improved | Total | Ap |
| 2 or less | 6 | 15 | 21 | 1.71 |
| 3 through 5 | 34 | 62 | 96 | 12.04 |
| 6 through 9 | 18 | 40 | 58 | 5.58 |
| Total | 58 | 117 | 175 | 19.33 |

χ^2 is 0.50 P is 0.1 at 4.61

Correlation 5: See Table 1A and B for data.

For age of onset, χ^2 is 2.53 (P is 0.10 at 13.36 for n of 8).

For age on admission, χ^2 is 5.68 (P is 0.10 at 10.65 for n of 6).

Correlation 6:

| A. Admission | | | B. Onset (6 Mo. or Less) | | | C. Onset (2 Mo. or Less) | | | |
|--------------|----------|-------|--------------------------|----------|-------|--------------------------|----------|-------|-----------|
| Month | Improved | Total | <i>Ap</i> | Improved | Total | <i>Ap</i> | Improved | Total | <i>Ap</i> |
| Jan. | 6 | 17 | 2.12 | 5 | 10 | 2.50 | 5 | 7 | 3.57 |
| Feb. | 2 | 12 | 0.33 | 1 | 4 | 0.25 | 1 | 4 | 0.25 |
| March | 7 | 13 | 3.77 | 4 | 7 | 2.29 | 2 | 4 | 1.00 |
| April | 4 | 16 | 1.00 | 5 | 13 | 1.92 | 5 | 10 | 2.50 |
| May | 2 | 8 | 0.50 | 2 | 12 | 0.33 | 2 | 7 | 0.57 |
| June | 4 | 13 | 1.23 | 2 | 10 | 0.40 | 2 | 6 | 0.67 |
| July | 6 | 20 | 1.80 | 6 | 13 | 2.77 | 6 | 10 | 3.60 |
| Aug. | 8 | 18 | 3.56 | 9 | 14 | 5.78 | 9 | 12 | 7.42 |
| Sept. | 1 | 14 | 0.07 | 4 | 6 | 2.67 | 4 | 6 | 2.67 |
| Oct. | 8 | 19 | 3.37 | 7 | 12 | 4.08 | 7 | 12 | 4.08 |
| Nov. | 6 | 11 | 3.27 | 3 | 11 | 0.82 | 2 | 4 | 1.00 |
| Dec. | 3 | 10 | 0.90 | 3 | 6 | 1.50 | 2 | 3 | 1.33 |
| Total | 57 | 171 | 21.92 | 51 | 120 | 25.31 | 47 | 85 | 28.66 |

χ^2 is 13.1 (A), 14.9 (B), 10.76 (C); P is 0.10 at 17.3 for n of 11. When data for Correlation 6C were grouped in seasons, χ^2 was 1.78; P is 0.10 at 6.25.

Correlations 7 and 8:

| 7. EEG | | | 8. Spinal Fluid | | | |
|-----------|--------|-------|-----------------|--------|-------|-----------|
| Status | Normal | Total | <i>Ap</i> | Normal | Total | <i>Ap</i> |
| Improved | 18 | 32 | 10.12 | 22 | 51 | 9.48 |
| Worse | 10 | 19 | 5.27 | 6 | 17 | 2.12 |
| Unchanged | 21 | 30 | 14.70 | 26 | 55 | 12.28 |
| Total | 49 | 81 | 30.09 | 54 | 123 | 23.88 |

χ^2 is 1.88 (7) and 0.65 (8) *P* is 0.10 at 4.61

χ^2 is 1.88 (7) and 0.65 (8) P is 0.10 at 4.61

Correlations 9 and 10: See Tables 2 and 3 for data.

χ^2 is 9.03 (9); P is 0.10 at 12.017 for n of 7.

χ^2 is 40.3 (10); P is 0.01 at 16.182 for n of 6; thus, this is highly significant.

For the modified Yates χ^2 , see Tables 2 and 3; for significance, see Method 1 in the introduction of this Appendix.

Correlation of severity with total duration: See Table 4 for data.

χ^2 is 14.94; P is 0.05 at 14.067 for n of 7, for status above 5 on discharge.

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Books

Epilepsias: fisiopatología, clínica, electroencefalografía, tratamiento.

By Victor Soriano, Professor of Medicine, Montevideo. Price, not stated. Pp. 360, with 102 illustrations. Editorial Labor, S. A. Argentina, Montevideo, 1955.

Physicians from Latin American countries tell us that they encounter an undue prevalence of epilepsy. Professor Soriano does not discuss this point; but there certainly is a substantial interest in epilepsy, especially its scientific aspects, among physicians of these countries. The present book should help to solidify and increase this interest. The author has studied in New York and New Haven, and his general treatment of the subject follows familiar lines. The 360 pages are about equally distributed among four subjects: descriptions of the various types of seizures and their cerebral localizations; the pathologic neurophysiology of seizures, with 27 illustrative diagrams and 9 case histories; electroencephalography, with 45 clearly printed tracings (though without markings for time or voltage), and 7 brief chapters on subjects such as the means of examination, etiology, infantile epilepsy, pathologic anatomy, and medical-surgical treatment. Discussion of social-psychological problems is not attempted. References number about 225 but fail to include contributions of the author. Dr. H. Houston Merritt contributes a preface in both English and Spanish. He blames epilepsy on "partially damaged neurones," but does not mention the possibility of partially damaged genes. The material of the book is presented clearly and concisely; printing and binding are good, and the monograph should be welcomed by scientifically minded Spanish-reading physicians and physiologists.

Symposium on Myasthenia Gravis. By Henry R. Viets and George D. Gammon, Guest Editors. *Am. J. Med.* 19:657-742. *The American Journal of Medicine, Inc.*, 49 W. 45th St., New York 36, 1955.

This symposium presents in concise form most (18 of 20) of the papers read at the Second International Congress on Myasthenia Gravis held at the Medical School of the University of Pennsylvania in December, 1954. As such, it is an excellent summary of progress in our understanding of this interesting disorder of neuromuscular transmission. Such a detailed analysis appearing in a medical journal written chiefly for internists would seem to be adequately justified by the following considerations: (1) There are estimated to be about 50,000 cases of myasthenia gravis in the United States alone, many undiagnosed, with an over-all mortality rate of 10%; (2) a variety of medicines are available for treatment, and (3) the specific indications for elective thymectomy are coming into clearer focus.

Following a review of the major clinical aspects of the disease, there appear a series of papers by leading investigators in the field. These include presentations dealing with normal and abnormal neuromuscular transmission and the provocative relationships—still incompletely defined—of the thymus, pregnancy, the endocrine glands, and myasthenia gravis. Preliminary encouraging reports on two new therapeutic agents, Mestinon and Mysuran, and a discussion of methods of treating myasthenic crises provide material of practical importance.

It is distinctly worth while to "take stock" periodically of our knowledge of any disease process. While the final answers to many vexing problems in myasthenia gravis are still missing, the chairman, editors, contributors, and sponsors (Myasthenia Gravis Foundation) are to be congratulated on this effort. In summarizing our limited knowledge, they have pointed out profitable avenues for future research. This disease is no longer to be considered rare; only a well-conceived team approach is likely to solve its many riddles.

Cybernetics. Transactions of the 10th Conference. Edited by Heinz Von Foerster, Price, \$2.75. Pp. 100. Josiah Macy Jr. Foundation Publications, 16 W. 46th St., New York 36, 1956.

This volume contains the papers presented at the final conference of a series of conferences on this subject sponsored by the Josiah Macy Jr. Foundation. Each of the authors has compiled his material into a single consecutive statement, and the discussion at the conference has been omitted. Warren S. McCulloch was the chairman of the final session. In his introductory

remarks, Dr. McCulloch claims a major virtue for the cybernetics group in their search for mechanism: At least a part of their formulations, in contrast to those of psychodynamics, is capable of experimental disproof.

In the first paper, W. Grey Walter describes a device which displays the electrical signals from scalp electrodes (as used in electroencephalography) by having them modulate the output of a group of small oscillographs assembled in a pattern. The signals thus displayed result in a very good simulation of the "enchanted loom" of Sherrington. Studies with this apparatus support the concept of a process of "abscission" (similar to "scanning") occurring in the brain. Presentation of a visual stimulus is followed by a recognizable pattern in the display, which after fading may reappear as transforms of its elements in parts of the brain generally regarded as association or silent areas. Repetitive exposure of the same stimulus leads to a fading of the pattern; it is maintained longest in the temporal lobe association areas and then is lost. A slight variation in the stimulus will reestablish the pattern. Several patients have been studied after surgical hemispherectomy. When the stimulus is cut off to examine the preservation system of the brain, the pattern in the display stops at once on the decorticated side. The cortex receives information from below in a much more elaborate and diffuse way than was indicated by classical physiological data, and it is on the cortex that the preservation process seems to depend. Two other papers are presented: "Semantic Information and Its Measure," by Yehoshua Bar-Hillel; and "Meaning in Language and How It Is Acquired," by Yuen Ren Chao. Dr. McCulloch is author of an appendix in which the points of agreement reached in the previous nine conferences on cybernetics are summarized. These basic points of agreement include the following: (1) The notions of inverse feedback are applicable to all problems of regulation, from steam engines to human societies; (2) every signal has two aspects: one physical, the other mental, formal, or logical; (3) the storage of information may be considered as negative entropy. The appendix closes with a recapitulation of the topics that have been considered in the previous conferences.

Norbert Wiener, if not the father, then the godfather, of cybernetics, is reported to have abandoned this child and is "at present happily immersed in the clear and serene domain of relativity."

The reviewer's reaction to this very well-prepared volume is expressed in a quotation from Stanley Cobb. "There is no evidence that the mechanism of the brain is similar to the electronic computing machine. The human brain is said to contain 10^{10} nerve cells, related to each other in intricate and complex pathways. Their interactions *could be analogous* to that of the computing machines. It is pure speculation to say that the brain *does* act in that way."

Nevertheless, this is an interesting and provocative series of essays.

News and Comment

Announcements

American Board of Psychiatry and Neurology, Inc.: It has become necessary to cancel the October, 1956, examination to be given in Chicago by the American Board of Psychiatry and Neurology, Inc. The following examinations are now scheduled:

New York.....Dec. 10 and 11, 1956
New Orleans.....March 18 and 19, 1957

Section on

PSYCHIATRY

Speculative Trends in Electrophysiology

Lessons in Humility Derived from a Survey of Our Historic Continuity with the Past

JAMES L. O'LEARY, M.D., St. Louis

The past gives us our vocabulary and fixes the limits of our imagination; we cannot get away from it. There is, too, a peculiar logical pleasure in making manifest the continuity between what we are doing and what has been done before. But the present has a right to govern itself so far as it can; and it ought always to be remembered that historic continuity with the past is not a duty, it is only a necessity.

—"Learning and Science."

JUSTICE OLIVER WENDELL HOLMES

How far is it permissible to let theory outrun fact? Zeno's paradox was a commonplace of an older logic: Give a turtle a head start and it is never overtaken by Achilles. Cerebral electrophysiology has much promise if exploited in the ways of science, little if tempted too far into speculation as a substitute for reality. Judged by published accounts of the various symposia that continue to pour across one's desk, the Achilles of speculation has been running ahead of the turtle of fact. Is that dangerous?

The writer does not deplore speculation because it interferes with productivity. When facts flow freely there is always the tendency to prejudge the importance of the achievement by the size of the pile and to assemble them as we can with liberal applications of bedding between. Nor is such immediate speculation on facts too dangerous, for the pieces of a construct can be torn apart later for reassembly. Danger

arises when speculation becomes an end in itself with no consideration for the possibilities of empirical verification. Such thinking may operate as a directive determining what the goal of knowledge shall be and employ catch phrases that are picked up imitatively by the less knowing. Thus through frequent repetition a hypothesis may come to pass for fact. Wiener (1948) emphasizes this point of view with his quotation from Lewis Carroll, "What I tell you three times is true."

My reading of the accounts of symposia has been haunted by the notion that many speculations fresh from the press had already been made at an earlier time when (to paraphrase Ramón y Cajal, 1937, p. 335) methodological penury was still an excuse for flights of imagination. Since Cabanis made his much criticized suggestion that the brain secretes thought as the liver does bile, C. N. S. physiology has been through a millenium of accomplishment. In its era a very few guesses have been necessary as directives toward progress. The rest has been a laborious search for facts and immediate speculation thereupon. As an example of an important guess take that of Bernstein that the nerve fiber is a membrane conductor; overwhelming evidence has developed to support it.

By comparison the field bearing upon the brain-mind relation is beset by guesses. Collectively these are the story of metaphysics. An important one concerns the choice between materialism and idealism or some compromise between the two. Another

Submitted for publication Feb. 23, 1956.

From the Division of Neurology, Washington University School of Medicine.

relates to consciousness. Is it a general correlate of nervous activity or is it localized? If localized, where?

On occasion it is worth comparing present with past thinking, seeking the stems of knowledge, the changes in the meanings of words over the years, those guesses that have fallen into neglect, and those others that dictate our present thoughts. Old texts often have a value different from that of original contributions: Their scope is broader, the writing more casual, and they perhaps reflect more accurately the knowledge common at the time they were written. The task set here is to induce humility about electrophysiological prospects of solving the brain-mind puzzle, the thesis being that old habits of thinking invariably affect the solution of current problems. Selected as important items for historical inquiry are the local theory of consciousness, reverberating circuits, nerve nets, the question of activity, and cerebral localization.

There is always a personal bias in the selection of content and its presentation. No one can weigh past influences on present thinking with scrupulous fairness. The view that prevails here is traceable to DuBois-Reymond (1874), who held it probable that both mind and matter are ultimately inscrutable. But he argued that once reconciled to his own ignorance the scientist has the right to fashion his views inductively, uninhibited by "myths, dogmas, and time-honored philosophies." He said by way of limitation: "Hence it is to the problem of sensation and not to that of free will, that analytical mechanics leads [p. 29]."

Reasons for Humility

There is nothing to show that either knowledge of the technical jargon of amplifiers or experience in analyzing electrophysiological data is a special asset in understanding the brain-mind relation. Language is an important barrier. Both psychologists and neurologists have their special languages; the meanings of words, the hidden premises, and the limitations to verifying statements from experience that

exist for the one language are rarely understood by a user of the other. When the languages are mixed indiscriminately confusion results, and this will continue unless common terms can be found and meanings for them agreed upon (Woodger, 1952).

The psychological approach has always appealed to the intellectuals. There are many 19th century philosophers, contemporaries or near-contemporaries of Hughlings Jackson, who are known for their contributions to mind: Reid, Hartley, Brown, J. Mill, Hamilton, Spencer, Bain, Ward, J. S. Mill, Bradley, Bosanquet, Clifford, and others too numerous to mention. Each of those named is accorded more space than Jackson in the last edition of the "Encyclopedia Britannica." If scholasticism and mind still lead science and brain to that extent, is it not a good example of the amount of humility that we need?

The neurologist brings to the old problem biological thinking which is difficult to submerge while meditating on consciousness. Whether the student of mind regards consciousness as a power, a faculty, a function, a succession of states, or a congeries of attributes, its unity of the moment is conceded. By contrast the tradition of brain is that of the localization of part functions within the whole. Though that whole has been granted freely to be greater than the sum of the parts, the size of the discrepancy remains obscure. To reconcile the dichotomy, today's neurologist ordinarily turns with the cyberneticist to signals of activity that move to and fro, from end to end, side to side, up and down, inside out, and outside in, knitting the brain into a unity. Even so, brain unity is still not a whole to which mind easily coheres. There is also the contrast between brain and mental states to provide another important reason for humility. In "Mind and Body" (1879) Bain saw us in this fix: "... mental states and bodily states are utterly contrasted; they cannot be compared, they have nothing in common except the most general of all attributes—degree and order in time; when engaged with one we must be oblivious of all that

distinguishes the other. When I am studying a brain and nerve communication I am engrossed with properties exclusively belonging to the object or material world. . . . Our mental experience, our feelings and thoughts, have no extension, no place, no form or outline, no mechanical division into parts." (p. 135.)

The Need for a Unifier

A central unifier is a common and old solution for the need of a brain unity to parallel that of consciousness. The choice between a focal and a general consciousness seemed as imperative to the writer of an 1813 text as it does today.

The existence of a centre, to which all the sensations are carried, and from which all motions spring, is necessary to the unity of a thinking being, and to the harmony of the intellectual functions. But is this seat of the principle of motion and of sensation circumscribed within the narrow limits of a mathematical point? or rather should it not be considered as diffused over the whole brain? (Richerland, p. 389)

The material-conscious dissectors of the 19th century and earlier were concerned with the destinations of nerves and tracts and from what they saw theorized about a seat for sensation. Once they put the seat in the medulla (Mayer; Metzger) owing to the confluence there of the several sensory routes derived from the spinal cord and cranial nerves. By 1853 Carpenter had moved it forward to the thalamus, recognizing the latter as an important terminus for the nerves of external sense (*sensorium commune*).^{*} He called it the seat of the

^{*}Prochaska, writing in 1784, defined the *sensorium commune* as the part of the nervous system in which the sensorial and motor nerves meet and communicate. He says (p. 430): "It certainly does not appear that the whole of the cerebrum and cerebellum enters into the constitution of the *sensorium commune*, which portions of the nervous system seem rather to be the instruments that the soul directly uses for performing its own actions, termed animal; but the *sensorium commune*, properly so called, seems not improbably to extend through the medulla oblongata, the crura of the cerebrum and cerebellum, also parts of the thalami optici, and the whole of the medulla spinalis; in a word it is co-extensive with the origin of the nerves."

"Sensational Consciousness" and believed that the changes the sensations effected there gave rise to a new excitement of nerve force that propagated along ascending fibers to the cortical gray. There they were instrumental in the formation of ideas and in the higher intellectual operations. Transmitted downward along Reil's "nerves of the internal senses," the results entered consciousness along with sensations from the periphery.

. . . it may be stated as a probable inference from the Physiological facts already referred to, and from the Psychological evidence hereafter to be adduced, that the Sensory Ganglia constitute the seat of consciousness not merely for impressions on the Organ of Sense, but also for changes in the cortical substance of the Cerebrum so that until the latter have reacted downwards upon the Sensorium, we have no consciousness either of the formation of ideas, or of any intellectual process of which these may be the subjects. (Carpenter, p. 757)

Thus a hundred years ago, albeit crudely, Carpenter already had two ideas that prevail today, those of a diencephalic center for consciousness and of a to-and-fro relation between thalamus and cortex. However, a unifier simply sharpens the focus of mental process upon a cluster of master cells, and the general representation of consciousness remains the logically compelling choice of many (Wechsler, 1952). Each of the two guesses is bolstered by the inconsistencies of the other. Mind and matter is only the best-known dichotomy; that between the general and the focal representation of consciousness is an example of the lesser ones in which the problem abounds.

Reverberating Circuits

In any speculative build-up there is always the key phrase with imaginative appeal to run through the receptive mind again and again. Today it is the reverberating circuit. Where did the notion come from?

Forbes' (1922) review of the spinal reflexes assumed delay circuits as the basis of after-discharge. In 1923, with Cobb and Cattell, he equated after-discharge with reverberation and later (1929) suggested that "the most prolonged after-discharge of the

crossed extension reflex would require a sort of central reverberation." He defined the latter as repeated traverse of the same conducting path. These are the first mentions of the reverberatory circuit hypothesis that I have been able to find. Ranson and Hinsey (1930) were also concerned with explaining after-discharge, and the above quotation from Forbes was used by them. They believed that the concept of reverberating neurone circuits had the advantage of not postulating "anything different from or in addition to the conduction of the nerve impulse"; and that may be taken as the important limitation that early workers placed upon the applicability of the concept. Forbes, Davis, and Lambert (1930) again mentioned the possibility of reverberation, and in the same year Kubie wrote of excitation waves which move in closed circuits, mentioning self-exciting activity. As a personal communication he notes the suggestion of Sir Charles Sherrington that the Golgi Type II cell would lend itself most readily to this type of organization. From the context it is fair to assume that Kubie's idea arose independently from that of Forbes.

Lorente de Nó (1932), in a paper summarizing his researches upon labyrinthine reflexes, also had to consider reflex after-discharge,[†] and referred his readers to a circuit diagram embodying feed-back principle. Later (1933), in a study of the vestibulo-ocular reflex arc, he again took up the problem. After considering anatomical alternatives he proposed a theory of closed "self-reexciting" chains as fulfilling "the fundamental condition of explaining

after-discharge by means of a constant bombardment of the motoneurons by excitatory impulses as postulated by Forbes" (p. 37). In a footnote to another paper of the same year (1933) it becomes clear that Lorente de Nó referred there to Forbes' 1922 article, for he indicated that his Golgi studies did not reveal sufficiently complex delay paths to provide after-discharges of six minutes.

For the entorhine cortex, his topic for the study mentioned just above, Lorente de Nó posed the problems of why the excitatory state does not extend to the whole mass of cortical cells and how self-reexciting chains return to the resting state. He accounted for the former in terms of the morphological characteristics of short axon links and for the latter by presuming a higher threshold for certain of them.

In retrospect the theories of Carpenter and of Forbes offer an instructive contrast in the fate of guesses. That of Carpenter was criticized thoughtfully by Davies (1876) and by Ferrier (1876) and became a neglected guess, to be revived only recently. The one of Forbes, conceived initially to account for the process of reflex excitation wholly in terms of nerve impulse, has grown spectacularly in other hands. It can now be invoked to explain any enigma, including consciousness, which a cerebral electrophysiologist may decide to take on, and is the fulcrum of a thalamocortical circulation of impulses that had its own origin with G. G. Campion (1929 and 1934). Among its late users there has been a paucity of anatomical or experimental effort to extend the factual basis in a manner consistent with subsequent elaborations. The concept is recent enough to show how a hypothesis can become a habit of thinking far removed from the facts that gave it origin.

Nerve Nets

The nerve net is the symbolic frame within which the reverberating circuit operates. As a symbol the net had a much earlier

[†] Steinhausen (1933) proved that the cupula of the semicircular canal is a highly damped jelly pendulum having a period of 20 seconds. Later Löwenstein and Sand (1940) recorded single nerve-fiber discharges during rotatory stimulation. They concluded in part that the sensory activity of the semicircular canal, interpreted in terms of the physical properties of the cupula, provides a framework that is adequate to account for the time-relations of nystagmus and after-nystagmus. Thus the end-organ itself may play an important role in the persistence of vestibular activity.

origin, being used at first to refer to a net-like confluence without synapses. Any brief historical evaluation must be a cautious one, for polemics have been associated with the notion since its beginnings. The net concept probably commenced with von Gerlach (1872), who observed the appearance of direct protoplasmic continuity in gold preparations of the spinal cord. In the subsequent 15 years the notion was widely taught in the schools. Forel and His spoke against it; Meynert is said to have accepted it. Through the combined efforts of Ramon y Cajal, Waldeyer, and His, the concept was supplanted by the neurone theory and the associated doctrine of free nerve endings.

It was first revived by Apáthy (1897), who maintained on the basis of histological preparations that the nervous elements of many animals are bound together by neurofibrils. Others followed claiming the existence of nerve nets in the coelenterates, echinoderms, worms, arthropods and molluscs, and in vertebrates, associated with the digestive and circulatory systems. Parker (1919), from whom the above account is derived, summarized the results as follows: It is now generally admitted that the conception of a synaptic system and of a nerve-net are not opposing ideas, but represent two types of nervous organization, both of which may exist side by side in the same animal. "The Elementary Nervous System." (p. 118)

An invertebrate nerve net may be a dependable unifier, as is shown by these old experiments. In the jellyfish there are eight marginal bodies distributed equidistantly about the edge of the swimming bell, and each contains sensory receptor and other nerve cells. Its nerve net is said to be formed by some fusion of the processes of these. After all eight are cut away (Eimer, 1878; Romanes, 1876), the whole bell ceases to pulsate; with one remaining in contact with the net, pulsations continue. Stimulation of a remaining body results in a wave of contraction that spreads in both directions to meet at the other side.

The term nerve net now has another use, epitomizing the cyberneticist's concept of cerebral functioning. There is no question

here of promulgating neuronal continuity, but perhaps the net symbol still conveys the need for unity in functioning. In our memory functional neuroanatomy has always been taught from the bias of impulses that propagate along chains of neurones, and closing the chains does not appreciably alter the perspective on consciousness. Limitations persist. The somata of neurones still represent little more than nodes of cross communication and of metabolism to which the proximal parts of axons are attached. The requisite for synaptic transfer is a proper change in the electrical field across the cell membrane, and everywhere that impulses circulate they do so along the surface membranes of axons. How is consciousness to be driven by a sodium pump? What is the equivalent in circulating impulses of sensations, feelings, ideas? Is there nothing more to a mnemonic reconstruction? Concepts can be recouched in an electronic phraseology, yet our habits of thinking be old. The following very old quotation is from Richerand's (1813) text: We anatomists are like the porters in Paris, who are acquainted with the narrowest and most distant streets, but who know nothing of what takes place in the houses! (Quotation [after translation] said there to derive from Fontenelle [1657-1757].)

Some net adherents have carried over another old habit of thinking, the need to prove mathematically that the myriad circuits available are sufficient in number to support an incomprehensible load. For relative complexity the brain-mind equation can be satisfied most simply by regarding both mechanism for one and process for the other as infinites and having done with the job. There is no way to quantify mental events, but we can always count cells as units and compute the combinations between them afforded by chains of two and three each. A figure of ten raised to an astronomical power is impressive; but it, too, is illusive and only has the effect of reassuring the curious that the brain is intricate enough to handle mental process. Though assuaging curiosity, such results also close the door upon undiscovered complexities which if

known might alter the picture. In an amusing passage Ireland (1886) illustrated the fallacy of this type of collation:

A physiologist made a calculation that there were so many thousand cells to the square inch. He found that there was room in the brain for all our words and all our thoughts, one to each cell. "The Blot on the Brain." (p. 312)

Mathematically disciplined and undisciplined views of mind and brain agree only in the incompleteness of the descriptions provided by each. Argumentatively, I shall take the undisciplined view. For the undisciplined there are obvious difficulties with a theory that carries consciousness no further than ambient impulses which operate digitally, analogically, or in combination. Begging a naïve interpretation, it would seem necessary that impulses circulating as earlier-acquired criteria be ready to sort arriving sense data statistically for their significance, rejecting some, passing others. Unless such a sorting mechanism is conceived of as circulating indefinitely a proper logistics should entertain the alternative of storage at accessible nodes.

Hebb (1949), at least, has seen that an ordinary self-reexciting chain, only complicated enough to sustain after-discharge, could still be too simple to carry statistical sorting of the order of complexity that consciousness might require. Although noting that mnemonic traces may be due to structural change, he also proposes cell assemblies that are three-dimensional lattices and entertains the notion that such irregular nets may reverberate indefinitely, provided the background activity in other cells remains the same. But however much the closed system is embellished to account for psychological phenomena, a difficulty remains: we can estimate, duly or unduly, the order of complexity necessary to support any unique theory of nervous functioning; about how many kinds of complexity the brain supports we continue to be in ignorance. Another possible kind is considered in the next section by way of comparison.

Atomism

Atomism had its origin with the Greeks. Our concern is with the mental kind, and the philosopher's penthouse is never loftier by comparison with the electrophysiologist's laboratory. For the moment the atom symbol should be separated from physicist thinking, for a philosopher's atom can refer as well to an intramolecular arrangement, to a whole nerve cell, or even to a lattice. There is an atomistic form of psychophysical parallelism just as there is a neurological one, conjectural psychic atoms interpenetrating with the physical ones. James explored the diversities of atomism in his "Principles" (1890), and there and elsewhere one gathers that it fell into the discard along with the associationist doctrine.

The purpose of bringing it in at all is to stress the importance of unknowns and that only, for it is another habit of our thinking to presume that what is unknown is also nonexistent. Today, by comparison with electrophysiology, cytochemistry may seem to afford limited possibilities for understanding nervous functioning. Considered from the broader biochemical approach there have been salient advances which as yet have scarcely touched upon C. N. S. problems. Among these are the relations of enzymes to genes and to nucleic acid, and the possibilities enzymes have for structuring compounds from substrate or for disassembling them. Viruses, too, offer a useful analogy based on the concept that they may stimulate host cells to use their own substrate in providing replicas of virus particles. Thus there are conceivable ways besides the metabolic in which the somata of neurones could contribute to nervous functioning, and to dismiss them is to ignore alternative kinds of complexity which the brain may afford.

James tells us ("Principles," 1890) that "we must find the minimal mental fact whose being imposes directly on a brain fact, and we must similarly find the minimal brain event which would have a mental counterpart at all." Under the atomistic

hypothesis it is difficult to conceive how such minimal brain events, each with its own mental counterpart, could be handled within the frame of present electrophysiological knowledge. On the other hand, the problem poses no such difficulties for a communications network hypothesis keyed by the circulation of all-or-nothing impulses: The insides of the neurones keep house, the outsides do the work.

The Question of Activity

In common usage activity implies the action of mechanism, and to the physiologist it is a general term for function. Our antecedents first learned to equate activity with sensation and movement, much later with electrical sign. The special meanings we give to the word extend from the passage of a nerve impulse along a single fiber—about which we know much—to the massing of cells in spontaneous rhythm—about which we know little.

The history of the concept of activity divides roughly into four steps. The first is the understanding of activity as overt behavior. Next is the recognition of the activity of the nervous system, muscles, glands, etc., responsible for overt behavior, with allocation of special part functions within the body whole. Electrophysiology (specifically) commenced with the grasping of the idea that the electrical sign of functioning in a given system can be initiated from a quiescent state, either as a result of a stimulus or spontaneously. Finally this step broadened to include initiation of a change in functioning from a base of activity.

In whatever context activity is taken, the ideas about it are apt to prove elusive, and research to clarify more completely its meaning in cerebral functioning would not be profitable as a primary objective. Yet we need to think continually about the excitability base from which such activity operates. The gain in popularity of the computing machine analog of mental process has led to increasing reliance upon the

analysis of coded input signals, with relative exclusion of whatever intrinsic factors there are which also contribute to excitability. Successful handling of the immediately arriving coded messages would appear to depend upon earlier conversions of similar code into circulating criteria, the products of conversion serving to pass or exclude what succeeds them. Where linked with dependent thinking about the organization of personality, the environment can be rationalized as largely to blame for any defects that develop, with relegation of genetically determined traits to a position of secondary importance. This is also a popular view.

What process transmutes into psychological phenomena the coded impulses fed into a mechanized brain by its outlying receptors? How generally are we aware of the incompleteness of the electrophysiological data upon which the coded impulse theory rests? At the present we know something of the several fiber types of peripheral nerve and of the correlation between their activation and the observer's experience. There is also the knowledge that relates to the durations of trains of impulses derived from the stimulation of certain receptors and of the associated accommodation processes. However, evoked response technique in the experimental animal (as so far applied) has been most successful in tracing through the central net the activity engendered in larger A axons; we have much less knowledge of the path followed by small C (pain) afferents past the dorsal root entry zone of the spinal cord. Thus one may speculate fatuously upon the satisfactions that a mechanical brain might derive from being the recipient of a pain-free code.

There are two principal views upon the maintenance of cerebral excitability. Net workers rely upon all-or-none nerve impulses whose presence or absence is the critical event in patterning the activity of which the net is capable. The same system that breaks the code into intelligible thoughts and acts is also charged with dependability

in maintaining readiness for action and not overdoing it. The alternative view conceives of masses or sheets of cells as undergoing rhythmic fluctuations in excitability more or less independent of the impulses which circulate through all-or-none closed-circuit linkages between the constituent neurones. Which shall prevail?

One other difficulty with present activity concept needs mentioning. The evoked response technique, as applied to the problems of cerebral electrophysiology, is limited to stimulus-conduction-response observations in anesthetized or decerebrate animals and has artificialities of which most workers are cognizant. The electrical disturbance called evoked response is dissipated in a matter of milliseconds subsequent to its appearance. Trains of spontaneous activity can succeed it, but prolong the signs of activity for at best a few more seconds. If there is any lingering trace of the electrical disturbance occasioning the response it is obscured by the condenser-coupled amplifiers used habitually in our work. This makes the nucleus of knowledge around which present theory centers inadequate of itself for explaining the long-term manifestations of activity. Endless reverberation is only another speculative effort to fill a need best expressed by William James (1909):

Naively we believe, and humanly and dramatically we like to believe, that activities both of wider and narrower span are at work in life together, that both are real, and that the long-span tendencies yoke the others in their service, encouraging them in the right direction, and damping them when they tend in other ways. . . . (p. 387)

Cerebral Localization and Consciousness

The difficulty in making brain as structure and consciousness as functioning cohere increases as the mosaic of cerebral localization approaches a system of statically ordered points. The single point representation has its rival in the multiple point theory, and for either the points can be thought of as the nodes of more extended neuronal configurations. The views of Jackson ("Selected

Writings," 1932), Walshe (1949), Brain (1952), Crichtley (1953), and Bay (1953) are exceptional, and for the most part our habit of thinking over the years follows Meynert, whom Freud (1892, "On Aphasia") said probably held the notion of a point by point localization of the body on the cerebral surface as early as 1867. That is the clinically expedient view. It is backed by much anatomical and electroanatomical mapping, including strychnine neurography and other procedures designed to establish how the activity induced at a cortical point can broaden its field of excitation. However, here too, elaboration of the available data to fit the needs imposed by unity of consciousness is easier to accomplish through conception than description.

A language barrier is imposed as one passes from the domain of anatomy and physiology to that of consciousness (Woodger, 1952). For one I confess to seeing nothing in the available knowledge that aids in formulating the nature of the transition from the one to the other. Clevenger (1885) said of consciousness that it fades with invariability of impression and is intensified abruptly with change. Local sign in sensation, a standby of cerebral localization doctrine, appears capable of effecting such an intensification; but past that the language used to report sensation is the psychological one, and terms drawn from the physical language have no agreed-upon implications.

The historical background of architectonics is mentioned briefly to illustrate the results of adapting the point localization habit of thinking to the parcellation of cortical fields. Comparative architectonics made it easy for the physiologist to consult authoritative maps showing sharp boundaries to aid in defining the sites of stimulation and ablation. As architectonics developed photographic enlargements of sections made mapping convenient, and the number of subfields distinguished outgrew anything that the ablative techniques of the physiologists could keep up with. Since

the advent of electroanatomical methods, cortical architectonics has come to play an outmoded role, and so far we have been relatively unsuccessful in achieving correlative results except for the gross relationships that are concerned.

By contrast with Brodmann's architectonics, that of Ramón y Cajal (1911) has not received its share of continuation support. Yet since Lorente de Nó's (1933 and 1934) excellent studies upon the entorhine cortex we have realized that the Golgi is the anatomical method of choice for obtaining data useful in electrophysiological studies. Field boundaries, sharp or gradual, are detectable from the rearrangements of dendritic and axonal plexuses, and when we are far enough advanced for critical evaluation of mapping procedures the Golgi should certainly be included in the appraisal. The state to which Golgi architectonics has fallen recently through disuse is illustrated by the remarks attributed to von Bonin, and nowhere rebutted, that Figure 8 of Wiener's "Cybernetics" suggests Layer IV of the visual cortex.

The history of architectonics has two applications pertinent to this analysis, illustrating the merit of consistent critical appraisal of procedure and that the advent of a new methodology can turn yesterday's outstanding expectation into today's uncertainty.

Final Comment

Our steadfastness in dualistic thinking is a prime obstacle in approaching the relation of brain to consciousness. Neglecting for the moment the brain-mind and physical object-sensible object dualisms, to mention but two, there is also the important language dualism to contend with. It is Wodger's (1952) view that there are four languages. Of these we mix uncritically at least two, the neurological and the psychological.

Bain (1879), in an excerpt used earlier, seemed sensitive to the difficulties that arise out of mixing languages, but for his time the psychological was the dominant one, that of physiology having but a limited lexicon

to tempt a psychologist. With the free flow of facts that neurological methodology has made possible in recent years, physiological terms have multiplied rapidly, and have been supplemented by others borrowed ad libitum from electronics. In one instance an old term—nerve net—has been restored to popularity with connotations different from those that it held originally. It has become impossible in some instances to ascertain what meaning a term may hold for different users, or even that the meaning does not change in a single writing. The philosopher Bradley's criticism of the concepts of activity held by his contemporaries is an old example, and it is paralleled by our own loose segregation of the words used to denote nervous and mental activity.

With respect to the other principal concepts that have been the subject of review—unifiers, reverberating circuits, and cerebral localization—the mixing of psychological and neurological languages is now a commonplace. As an opposite example of a physiological theory couched in physical terms we may take that of Hodgkin, accounting for nerve impulse transmission in terms of ionic transfer. From his theory predictions can be made that are subject to experimental verification. That is the way in which science should use feed-back to test its theories. By contrast, predictions cannot now be made which permit the theories discussed here to be subjected to such verification. As a result speculation goes its way unhampered by orthodox checks.

There are historical instances of correct guesses made far in advance of a methodology suitable to confirm them; but other such guesses have been fallacies that engendered enthusiasms we have been unable to shake. The latter is a lesson to remember. The processes leading to sensation, on the one hand, and to behavioral manifestations, on the other, are proper interests for a cerebral electrophysiologist, providing a mass of detail to discover, weigh, and conceptualize in the interests of neurology. Alone, the methodology seems unsuitable for the problems posed by Boswell, writing in 1764:

"How strange is the mind of man. How are our ideas lodged? How are they formed? How little do they depend upon realities!" ("Boswell on the Grand Tour," p. 16.) His remarks are quoted here as a long past reckoning that we can only hope will not contain ultimate unanswerables.

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The Effects of Reserpine on Schizophrenic Patients

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Considerable enthusiasm has been engendered in recent years by new drugs in the treatment of the mentally ill. Many clinical reports which have been published were glowing in their description of the effects on schizophrenic patients of such drugs as reserpine and chlorpromazine. The considerable agreement in many such evaluations is indeed cause for optimism; yet a historical review of the recent past reveals that many new treatment approaches have failed to live up to initial hopes. Such initial optimism is only justified if significant treatment effects are demonstrated in controlled studies, since it is possible that subjective factors involved in uncontrolled clinical evaluations may lead to unreliable findings.

The present investigation was undertaken to study the effectiveness of reserpine in the treatment of schizophrenic male patients within a controlled setting.

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This investigation was carried out under a grant from Eli Lilly Company, who supplied Sandril and placebo tablets.

David Puchkoff, Chief Pharmacist; Drs. J. Berghorst and W. Sharp, Ward Psychiatrists, and individual members of the Psychiatry, Clinical Psychology, and Nursing Service staffs assisted in this study.

Method

One hundred seventy male schizophrenic patients were selected as subjects. Since it was desirable to obtain as wide a range of schizophrenic symptomatology as possible, patients were selected from four closed hospital wards. These wards can be described in terms of their usual patient populations:

Ward A: Composed of severely regressed, long-term schizophrenic patients who showed delusions and/or hallucinations, were in poor contact with reality, and were apathetic and withdrawn

Ward B: Composed of chronic schizophrenic patients who exhibited delusional and/or hallucinatory symptoms but who were in fairly adequate contact with reality (These patients ordinarily did not constitute a management problem)

Ward C: Composed of chronically disturbed schizophrenic patients displaying periods of agitated, violent, combative, or uncontrollable behavior who were in poor contact with reality and exhibited delusions and/or hallucinations

Ward D: Composed of acute-intensive treatment service patients displaying delusions and/or hallucinations and whose contact with reality tended to fluctuate

Fifty patients were selected from each of Wards A, B, and C, along with 20 patients from Ward D. Only patients were selected whose diagnoses were uncomplicated by findings of organic involvement, who within the previous year had not received insulin coma therapy, electroconvulsive treatment, or individual or group psychotherapy, and who were not consistently receiving adjunctive medication, such as barbiturates. Within each ward, patients were randomly divided into three treatment groups. The first two groups, which were designated as the drug and placebo groups, consisted each of 40% of the patient sample. The remaining subjects were assigned to the third, or no treatment, group. A number of patients originally assigned to the drug or placebo group refused medication and were pooled together as the refusal group to serve as additional control subjects in the analysis of results.

Administration of reserpine was in the form of 1, 2, or 4 mg. tablets. No uniform drug dosage for all patients was attempted. Instead, ward

physicians varied dosages according to the individual patient's tolerance. All physicians were instructed to maintain the maximum dosage consistent with their clinical judgment as to optimal level. As a control factor, placebo tablets were obtained which were identical in physical characteristics with the drug tablets, e.g., shape, size, color, and taste. All personnel dispensing the placebo were told that it was a variant of reserpine named Plasepine. An equivalent number of placebo tablets was given to control patients, as were reserpine tablets to experimental subjects. The actual reserpine dose varied from 2 to 10 mg. daily, the majority of patients receiving 4-5 mg. a day.

All subjects were evaluated prior to the initiation of medication and, again, after a two-month period by means of the Lorr Multidimensional Scale for Rating Psychiatric Patients.³ This scale is composed of 62 separate brief graphic rating scales relating to various aspects of psychopathology. The scales permit the securing in a quantitative form of a relatively objective description of the observable behavior or inferable traits and symptoms of hospitalized patients. The initial 40 ratings are derived from judgments based upon a diagnostic interview. The last 22 scales are based upon ward behavior and are ordinarily completed by ward personnel. In order to obtain as reliable judgments of condition as possible, in this study, the diagnostic interviews were jointly conducted by a team composed of psychiatrist, clinical psychologist, and psychological trainee. Each then rendered independent ratings based on his interview observations and inferences. Independent ratings of ward behavior were also secured from the nurse and charge aide on each of the experimental wards. Since the ward psychiatrist was responsible for the prescription of drugs on his ward and the nurse for dispensing them, it was possible that their ratings were compromised by their memory of patient treatment. Consequently, it became necessary to evaluate reliability of ratings of judges. An analysis of judges' ratings revealed that in 80% of all ratings judges agreed or deviated 1 scale point. Judges differed on 12% of all ratings in that one considered these unratable, while the other did not. These results were interpreted as indicating acceptable reliability for this study. The combined ratings of the three interview judges were then utilized in the analysis as probably representing the most valid obtainable descriptions of patients. Since only two judges were involved for ward behavior scales, the average rating was multiplied by 3 to make these scale scores comparable to interview scale scores derived from three judges.

In addition to these ratings, the nurse and charge aide on each ward rendered a global judg-

ment of change on a separate four-point rating scale.

The primary analysis of results was carried out with respect to the 11 factors or dimensions of psychopathology which Lorr derived from the scales through factor analysis.³ Factor scores are obtained from various combinations of multidimensional rating scales. Factors are as follows:

- A. Retarded depression *vs.* manic excitement
- B. Compliance *vs.* resistiveness
- C. Paranoid projection
- D. Activity level
- E. Melancholy agitation
- F. Perceptual distortion
- G. Motor disturbances
- H. Submissiveness *vs.* belligerence
- I. Withdrawal
- J. Self-depreciation *vs.* grandiose expansiveness
- K. Conceptual disorganization

In addition to scores on these factors, the rating schedule permits the derivation of a measure of over-all degree of psychopathology, the morbidity score. A patient may be evaluated on each factor in terms of his raw-score deviation from the factor score presumably achieved by a normal subject. The morbidity score represents the sum of deviations for all 11 factors.

Thus, in this study, the effects of the different types of patient treatment can be evaluated with respect to specific areas of psychopathological symptom and behavior constellations, as well as in over-all change of illness. Following the procedure suggested by Lorr,¹ factor and morbidity scores were computed only for patients who were ratable on a majority of the component scales comprising these variables. As a consequence, the number of patients for whom data were available differed from variable to variable. Data which were obtained were statistically analyzed, primarily through repeated applications of single variable analyses of variance, by χ^2 , and, in the instance of morbidity-score changes for all patients, by analysis of covariance.

Results

A number of separate analyses of variance comparisons were made for each ward and for all patients considered collectively. These involved the following:

(a) All groups. This furnished an indication of whether significant differences, independent of chance, resulted.

(b) Reserpine and placebo patients *vs.* all patients receiving no medication. This, along with comparison (c), provides an indication whether the psychological factor of

receiving medication was sufficient to bring about significant change.

(c) Placebo patients *vs.* all patients receiving no medication.

(d) Reserpine patients *vs.* placebo patients to determine whether the drug has any effect beyond that attributable to the psychological effect of receiving medication.

(e) Reserpine patients *vs.* subjects not receiving medication, and again *vs.* all control subjects.

(f) No-medication subjects *vs.* subjects who refuse medication, to determine the validity of a common pooling of these patients. In this comparison no significant difference was found. Hence, this procedure was justified. Results are summarized in Table 1.

In all instances, indicated differences at the $P=0.05$ level of confidence lie beyond that level and frequently approach the $P=0.01$ level. These results indicate that no significant differences were found between reserpine and control subjects for Ward A. It should be noted that patients from Ward A were the most severely regressed long-term subjects in the investigation. On the other hand, significant differences in favor of reserpine were found in Ward B, composed of less regressed chronic patients, and on Ward C, where patients were chronically disturbed. No significant reserpine effect occurred on patients in Ward D. This last finding may perhaps be discounted, since only a small number of subjects were involved and dramatic changes would be required in a majority of Ward D reserpine patients in order to be statistically significant. For this reason, further separate analyses for this ward were not carried out.

Results of a χ^2 analysis of global-change ratings rendered by ward personnel are in agreement with these findings. Thus, no significant difference in improvement in favor of Ward A reserpine subjects was found, whereas significant differences at the $P=0.001$ and $P=0.02$ levels, respectively, in favor of reserpine subjects were reported from Wards B and C.

Findings when separate ward patients were pooled into appropriate groups revealed conclusively that improvement in reserpine subjects was significantly greater than for all other subjects. In considering over-all changes of psychopathological symptomatology as reflected in morbidity scores, significant reductions in favor of reserpine patients are found when all subjects are appropriately pooled and on Ward B and C. Since it is possible that these findings may be due to initial differences in the severity of illness of patients assigned to the various experimental groups, an analysis of covariance of morbidity scores was conducted. This has the effect of equalizing the initial morbidity scores for all groups to be compared. Reserpine subjects were again found to have responded significantly better.

A perusal of Table 1 indicates that changes occurred in only specific areas of psychopathology and that these, with the exception of one category, Withdrawal (I), were specific for Wards B and C. Thus, reserpine subjects on Wards B and C began to develop a greater interest in their external surroundings, and became less taciturn, less seclusive, and more social, as well as tidier and more concerned with their personal appearance.

In addition, Ward B "chronic" patients reacted to reserpine primarily by change in two factor areas, B and H. These reflect a reduction of resistiveness; less irritability, hostility, and profanity, and greater cooperativeness and orientation for their environment.

The more chronically disturbed patients on Ward C responded primarily with significant changes in Factors F, G, and K. These changes, as well as the reversal of withdrawal tendencies, may be taken to indicate that the process of progressive personality disorganization affecting these patients has been at least partially halted. Conceptual thinking appeared improved, and perceptual disturbances, such as hallucinatory experience and bizarre delusional idea-

TABLE 1.—Significance of Factor and Morbidity Score Changes

| | Factors | | | | | | | | | | | Unadjusted Morbidity Scores | Adjusted Morbidity Scores |
|---------------------------------|---------|--------|----|----|----|----|----|--------|--------|----|----|-----------------------------|---------------------------|
| | A | B | C | D | E | F | G | H | I | J | K | | |
| Ward A | | | | | | | | | | | | | |
| Between groups..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| T* vs. no T..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. placebo..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. all controls..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Placebo vs. nothing..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Ward B | | | | | | | | | | | | | |
| Between groups..... | No | P0.01 | No | No | No | No | No | P0.05 | P0.01 | No | No | P0.05 | No |
| T* vs. no T..... | No | No | No | No | No | No | No | P0.05 | P0.01 | No | No | No | No |
| Reserpine vs. placebo..... | No | P0.01 | No | No | No | No | No | P0.05 | P0.01 | No | No | No | No |
| Reserpine vs. all controls..... | No | P0.001 | No | No | No | No | No | P0.05 | P0.01 | No | No | No | No |
| Placebo vs. nothing..... | No | P0.01 | No | No | No | No | No | P0.05 | P0.01 | No | No | No | No |
| Ward C | | | | | | | | | | | | | |
| Between groups..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| T* vs. no T..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. placebo..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. all controls..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Placebo vs. nothing..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Ward D | | | | | | | | | | | | | |
| Between groups..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| T* vs. no T..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. placebo..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. all controls..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Placebo vs. nothing..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| All subjects | | | | | | | | | | | | | |
| Between groups..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| T* vs. no T..... | No | P0.01 | No | No | No | No | No | P0.01 | P0.001 | No | No | P0.01 | P0.001 |
| Reserpine vs. placebo..... | No | P0.05 | No | No | No | No | No | P0.05 | P0.01 | No | No | P0.05 | P0.01 |
| Reserpine vs. all controls..... | No | P0.001 | No | No | No | No | No | P0.01 | P0.001 | No | No | P0.01 | P0.001 |
| Placebo vs. nothing..... | No | P0.001 | No | No | No | No | No | P0.001 | P0.01 | No | No | P0.01 | P0.001 |
| Unadjusted Morbidity Scores | | | | | | | | | | | | | |
| Between groups..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| T* vs. no T..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. placebo..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reserpine vs. all controls..... | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Placebo vs. nothing..... | No | No | No | No | No | No | No | No | No | No | No | No | No |

* T includes reserpine and placebo subjects.

tion, were either diminished or masked. Other changes included an increased orientation for self and others and for time, increased congruency between thought and affect, less blocking and more relevant speech, and a decrement in mannerisms and motor bizarreness.

Similar results were found in the comparisons of all reserpine subjects with all members of the other subject groups, irrespective of individual wards. In addition, these comparisons reveal that reserpine and placebo patients also improved with respect to Factor C in that delusions of persecution and influence and ideas of reference comprising the paranoid pattern have been reduced. Since these changes were not observable for the individual words, one may conclude that these are minimal, although consistent for the several wards, and that this effect was probably due to psychological reaction to the receipt of medication.

The over-all extent of change which occurred for all subjects in the study was evaluated by means of morbidity scores and is shown in Table 2.

Since the morbidity scores in this investigation were based upon a summation of three judges' ratings, it was necessary to take the average judge's rating in order to make comparisons with morbidity-score norms described by Lorr.¹ Besides presenting data for morbidity changes for Wards A, B, and C and all patients pooled into appropriate experimental groups, data are presented for all patients when the initial level of psychopathology is equalized by means of analysis of covariance. It will be noted that, with the exception of Ward A, morbidity-score reductions are considerably greater for reserpine subjects than for those in the other groupings. Despite the assignment of patients within the wards to the various groups on a random basis, reserpine patients initially had the largest morbidity scores. However, analysis disclosed that these were not significantly greater than those of other groups. It may appear surprising that Ward A patients, described as being severely regressed, long-term schiz-

TABLE 2.—Morbidity Score Means and Changes

| | N | Pre-drug Mean | Post-drug Mean | One-Third Post-drug Mean (for comparison) | Post-drug Score Percentile Rating |
|---------------------------------|----|---------------|----------------|---|-----------------------------------|
| All patients (unadjusted means) | | | | | |
| Reserpine..... | 59 | 146 | 105 | 135.0 | 59 |
| Placebo..... | 52 | 125 | 116 | 38.7 | |
| No medication..... | 22 | 139 | 131 | 43.7 | |
| Refusal..... | 9 | 190 | 110 | 36.7 | |
| All patients (adjusted means) | | | | | |
| Reserpine..... | 57 | 134 | 97 | 32.3 | 48 |
| Placebo..... | 53 | 124 | 115 | 41.6 | |
| No medication..... | 22 | 134 | 127 | 42.3 | |
| Refusal..... | 9 | 134 | 135 | 45.0 | |
| Ward A | | | | | |
| Reserpine..... | 17 | 115 | 104 | 34.7 | 59 |
| Placebo..... | 14 | 109 | 111 | 37.0 | |
| No medication..... | 7 | 115 | 107 | 34.7 | |
| Refusal..... | 4 | 103 | 102 | 34.0 | |
| Ward B | | | | | |
| Reserpine..... | 19 | 171 | 126 | 42.0 | 80 |
| Placebo..... | 19 | 143 | 129 | 43.0 | |
| No medication..... | 6 | 177 | 159 | 53.0 | |
| Refusal..... | 5 | 96 | 116 | 38.7 | |
| Ward C | | | | | |
| Reserpine..... | 16 | 150 | 92 | 30.7 | 48 |
| Placebo..... | 14 | 131 | 114 | 38.0 | |
| No medication..... | 7 | 132 | 132 | 44.0 | |
| Refusal..... | 0 | --- | --- | --- | |

RESERPINE IN SCHIZOPHRENIA

ophrenic patients, obtained the lowest morbidity scores of any ward. However, many of these patients had achieved a stabilization on a regressed level, and symptomatology was less blatant in various areas than was the case for the less chronically regressed, more acutely disturbed patients, in the other wards. In Ward A, patients tended to be more similar in their ratings than were those in other wards. In these other wards greater numbers of patients deviated from ward norms on one or more factor areas.

Further single-variable analyses of variance comparisons were made with respect to the extent of change in factor areas for reserpine patients on the various wards. These results, shown in Table 3, indicate that the chronically disturbed patients on Ward C showed greater factor changes than did Ward B patients and that both groups surpassed Ward A reserpine patients in change. In the instance of Ward C, however, change in Factors B and H

Since the three wards can be conceived of as differing in their position along a continuum of stabilization, it may be that the extent of improvement with reserpine is related to this same continuum. Thus, Ward C, on one end of the continuum, had the greatest changes, whereas Ward A, at the other end, changed insignificantly.

When the final morbidity scores of reserpine patients (Table 2) are compared with norms, it is evident that the morbidity scores of the patients even after treatment lay at or above the median for hospitalized neuropsychiatric patients. The assumption may reasonably be made that at any one time only those patients with morbidity scores in the lowest third of a NP hospital population are eligible for discharge. Consequently, those patients treated in this study with reserpine for two months were not as a group sufficiently improved that there might be reasonable expectation of an early hospital discharge. It is recognized that individual patients, however, may have

TABLE 3.—Comparison of Factor Changes for Reserpine Subjects on Various Wards

| Comparisons | Factors | | | | | | | | | | |
|-----------------------|---------|-------|----|----|----|-------|-------|--------|-------|----|-------|
| | A | B | C | D | E | F | G | H | I | J | K |
| Between wards | No | P0.05 | No | No | No | P0.05 | P0.05 | P0.01 | P0.05 | No | P0.01 |
| Between Wards B and C | No | P0.05 | No | No | No | No | No | P0.001 | P0.05 | No | No |
| Between Wards B and A | No | No | No | No | No | No | P0.05 | No | No | No | P0.05 |
| Between Wards C and A | No | P0.01 | No | No | No | P0.01 | P0.01 | P0.001 | P0.05 | No | P0.01 |

(compliance *vs.* resistiveness and submissiveness *vs.* belligerence) cannot be attributed to the effects of reserpine, since control patients changed sufficiently in these factors that a comparison revealed no significant difference between them and reserpine subjects. Since spontaneous improvement and behavioral shifts can be expected to occur most frequently in disturbed patients, the magnitude of these factor changes in control subjects perhaps can be explained.

Additional data indicate that reserpine patients on Ward C had an average factor-score change of 6.9 points; on Ward B, an average change of 4.3 points, and on Ward A, an average change of 1.4 points.

improved sufficiently that discharge would be feasible.

A number of questions remain yet to be answered with respect to these particular subjects. Will reserpine continue to effect change after use of the drug has been halted? Will improvement be maintained, or will relapse occur? What additional effects would a longer dosage period have? These problems are presently being investigated and will be subsequently reported.

Summary

One hundred seventy male schizophrenic patients were randomly distributed into a reserpine treatment group and various con-

trol groups. Following two months' medication, changes in behavior and symptoms were evaluated by means of the Lorr Multidimensional Rating Scale and a global clinical rating scale. Comparisons between reserpine and control patients disclosed that the most chronically regressed patients treated by reserpine showed no significant improvement, whereas less chronic and more disturbed patients improved in various areas of psychopathology. The extent of improvement, however, was not sufficiently

great, except in individual patients, that the bulk of reserpine-treated schizophrenic patients could be eligible for early hospital discharge.

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Habit-Forming Properties of Meprobamate

(Miltown or Equanil)

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The increasing demand for meprobamate (Miltown or Equanil) medication by the general public is without parallel in modern pharmacological history and has been the subject of much lay editorial comment. The manufacturing of tranquilizing drugs has become big business, and there is even talk of selling meprobamate over the counter without a prescription.¹

Because of this, and because meprobamate has been advertised as being non-habit-forming, I would like to modify a preliminary report in which I also stated that meprobamate was not habit-forming.² Further clinical experience has convinced me that this is by no means always the case and that a few patients do form a harmful habit for this drug.

Habit formation or addiction to a drug is characterized by (1) a psychic craving for the drug based on its euphoric effects, (2) a build-up of tolerance requiring increasingly larger doses to produce the same effect, and (3) withdrawal symptoms when the drug is suddenly discontinued.

Meprobamate is not addictive in respect to any increase in tolerance. On the contrary, one of the big advantages of this drug is that with continued medication decreasing amounts are usually needed to produce the same effect.

Withdrawal symptoms are, however, sometimes experienced. Patients have occasionally described a feeling of "nervousness" and "the jitters" above their premedication level of tension or a feeling of "let down" when they have missed their usual dose of

meprobamate. They often remark, "I guess the medicine was doing some good after all because when I stopped it, I certainly felt nervous." Six patients who had formerly been addicted to alcohol and barbiturates stopped taking meprobamate because, as they said, they felt they were "getting hooked" or addicted to the drug and "wanted no part of it." One patient who had been taking large doses of meprobamate (6.4 gm. daily for one month and no other medication or alcohol) had a convulsion (the only one he had ever had) 10 hours after discontinuing this medication. While this may simply have been a coincidence, the pattern was similar to the convulsions seen after sudden withdrawal from alcohol or barbiturates. All this suggests that some people may develop a physical dependency on meprobamate.

A psychologic dependency on the drug is also undoubtedly created in certain patients. Many feel so much less tense when taking the drug that there may be an exaggerated feeling of well-being. Some may even experience a degree of exhilaration or euphoria. In most cases, this does not appear to be harmful, but in a few patients it leads to overdosage on the basis that "if one pill helps. Three will help three times as much." I have had 13 cases among over 600 patients for whom I have prescribed meprobamate in which the drug had to be discontinued because of excessive self-medication. The patient, or more frequently the relatives, will call up and say the patient is acting exactly as if he were drinking, although this possibility could be ruled out. I personally have seen patients under the influence of 6 or more tablets a day manifest all the signs of intoxication, including euphoria, dysarthric speech, and generalized incoordination. Other patients

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simply take so much of the drug that their relatives complained of their "lying around sleeping all day" or falling and hurting themselves. The implications of this in regard to the dangers of driving a car while under the influence of excessive meprobamate medication is self-evident. Of these 13 patients, 10 were alcoholics who were abstemious at the time. As is usual, there is a tendency for many alcoholics to take excessive amounts of anything that acts as a sedative, and the prescription of meprobamate to alcoholics especially should be watched closely for abuse. The proportion of patients who are either unwilling or unable to keep their dosage within prescribed limits is small, but definite, and constitutes a worry and responsibility for the physician. I have not encountered this same problem of excessive self-medication with other ataractic drugs (chlorpromazine and reserpine) and believe that meprobamate has some additional sedative properties that place it in a class by itself.

None of this is intended to depreciate the clinical value of meprobamate, which I still believe to be, in general, the most helpful and least harmful of all the drugs used for the relief of nervous and emotional tension. Thus far, the obvious over-all benefits of meprobamate far outweigh the problems produced by the relatively infrequent abuse of this drug. It does behoove the physician, however, to ponder the implications of a

mass dependency on this drug, as well as the possibility of harmful habit formation in the occasional patient.

Conclusions

Meprobamate (Miltown or Equanil) can be habit-forming in a small percentage of patients. This may lead to excessive self-medication, resulting in harmful intoxication or oversedation. While these relatively few cases should not detract from the general usefulness of this drug, it does place a responsibility on the physician to supervise carefully its administration.

Addendum

Since submitting this paper, I have had nine patients report that it took increasing amounts of meprobamate to obtain the same effects. Apparently, a few patients do have a build-up of tolerance to this drug. One patient has fallen off a chair and severely injured her shoulder because of being "drunk" on meprobamate, and another patient had a car accident which he directly attributed to mental sluggishness and slowed reflexes from meprobamate medication.

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Comparison of Reserpine and Placebo in Treatment of Psychiatric Outpatients

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Introduction

In the functioning of a psychiatric outpatient department in a large city, where the community needs for psychiatric care are considerably greater than the resources of the clinic to deal with them psychotherapeutically, we are constantly concerned with the discovery and development of additional methods and means of helping emotionally sick people. Recent work at Yale,¹ confirmed for our population at this clinic,² has pointed up the marked difficulties in attempting to deal with psychiatrically unsophisticated persons of lower socioeconomic class by psychotherapeutic means. The use of drugs in the management of many patients has long been a customary practice and has yielded varying, and often highly personalized, clinical impressions of their efficacy.

With the discovery of the "tranquilizing" effects of reserpine in hypertensive patients³ and in psychotic patients,⁴ and with the knowledge of the toxic effects of the drug, it became, therefore, of interest to evaluate reserpine in the treatment of psychiatric outpatients. We were not unaware

of already existing favorable reports on the usefulness of the drug in the treatment of ambulatory psychiatric patients, but previous research with another drug⁵ had fostered in us an attitude of reservation and caution. Because a psychiatric outpatient population includes a wide variety of patient types, and since we had no basis for limiting the study to any one special type, we undertook a kind of screening study to determine the types of patient or patient characteristics, if any, which might respond favorably to the drug.

Procedure

Patients from the Continued Treatment Clinic of the Henry Phipps Psychiatric Clinic were selected for the study if they were not epileptic, alcoholic, overtly psychotic, mentally defective, or suffering from physical disorders requiring other medications. Each patient was told that a new drug was available which might be helpful to him, but that it would take 12 weeks to determine with confidence whether the drug would or would not be helpful. If a patient agreed to take his pills for the 12 weeks and to return for evaluation every 4 weeks, he was included in the study.

A set of 34 questions to be asked of each patient was constructed. The questions were designed to include symptoms of anxiety, depression, obsession-compulsion phobia, irritability, and reported side-effects of the drug. Each symptom was rated by the interviewing psychiatrist on a four-point scale of disability or distress, a higher score indicating greater distress. To determine how reliably these ratings could be made, the two psychiatrists who participated in the experiment both made ratings of the same two patients. Ratings of the first patient were in perfect agreement on 32 items and 1 point apart on 2 items. Ratings of the second patient were in perfect agreement on 30 items, 1 point apart on 3 items, and 2 points apart on 1 item. This indicated that the reliability of the rating was quite acceptable.

The reserpine was prepared in pills of 0.5 and 1.5 mg., and placebos were made to match. All

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In this study, Rau-Sed (Squibb) was the preparation used. The Squibb Institute supplied this material and matching placebos.

pills were identical in size and shape. The psychiatrist asked the patient all 34 questions, pursuing each when necessary to clarify the response, and rated the severity of each symptom. The questions asked were directed to the last week before the visit, thus allowing for a full three weeks' trial on the new medication before the effects were measured. The psychiatrist then recorded the patient's blood pressure and pulse and gave the patient his package of pills for the next four-week trial period. No psychotherapy was attempted. This procedure was followed at the initial interview and after the fourth and eighth weeks. After the 12th week, the procedures were repeated, but no further pills were given. Patients were told to take 3 pills a day, the dosage scale for reserpine thus becoming 1.5 mg/day (low dose) and 4.5 mg/day (high dose). The psychiatrist did not know which pills he was giving any patient at any time. The three types of pills were administered in any of six possible sequences, which had been predetermined and randomized prior to the actual beginning of the experiment.

Patients were urged to notify the psychiatrist if they stopped taking the pills for any reason.

Results

Twenty-seven patients began the experiment, but only fourteen completed it. Before an evaluation of the effectiveness of the reserpine could be made, it was important to know (1) whether the drop-outs could be called failures of the drug per se or whether they occurred for other reasons, and (2) the degree of efficacy of placebos in relieving distress, since, to be determined effective, the reserpine would be required to achieve benefits beyond those attributable to a placebo effect alone.

The Drop-Outs

Of the 13 patients who failed to complete the experiment, one could not be counted, since it was later confirmed that he never took any of the pills. The remaining 12 were studied from three standpoints: (1) the medication being taken at cessation, (2) the time of cessation (first, second, or third trial), and (3) the initial medication given to these "drop-outs."

With respect to medication, seven dropped out while on the high dose of reserpine,

four on the low dose, and only one while on placebo. Thus, it seems clear that this group of patients was affected by the drug in a way which they experienced as more disturbing than helpful.

Failure to complete the experiment also bore a definite relationship to time. Thus, eight patients dropped out during the first four-week trial, three during the second, and only one during the third trial. Of those dropping out during the first trial, five were on the high dose and three on the low dose of the drug, while none were on placebo.

The relationship between initial medication and failure to complete the experiment is shown in Table 1.

TABLE 1.—Analysis of Failure to Complete the Experiment According to the Type of Medication Received on the First Trial

| Medication Received on the First Trial | Failed to Complete Experiment | Completed Experiment |
|--|-------------------------------|----------------------|
| Reserpine (4.5 mg. daily)..... | 6 | 2 |
| Reserpine (1.5 mg. daily)..... | 4 | 5 |
| Placebo..... | 2 | 7 |
| Total..... | 12 | 14 |

Although the numbers are small, it does seem that 4.5 mg. daily is too high a dose with which to introduce our psychiatric outpatients to reserpine. A low dose initially, with gradual increase, is probably more desirable for the administration of this drug.

As the reasons given for discontinuing the medicine, six patients reported varying combinations of edema, vertigo, nasal stuffiness, nosebleed, and a tingling numbness of the extremities, mouth, or lips, accompanied by a generalized lassitude, most distressing to them. "I feel punk." "I feel all washed out." "I feel lousy." These symptoms were of sufficient intensity to cause them to stop the medication. Of these six patients, four were on the high dose and two were on the low dose of reserpine. Of the four on the high dose, three were patients who were receiving the high dose as their first trial of medication. Each of these patients stopped within a seven-day period. One patient had received the low

dose initially, followed by the placebo. This patient stopped after one week on the high dose and subsequently indicated that she had experienced similar, but less intense, symptoms while on the first trial, i.e., the low dose. Of the two patients who stopped on the low dose of reserpine, one was on the first trial, and one had received placebo previously.

Four patients reported symptoms of a type seemingly more related to their personal psychological reactions than to any effect of the medication per se. Nevertheless, their symptoms were of sufficient intensity to cause them to stop the medicine. Of these patients, one was on the high dose (first trial) and two on the low dose (first trial) of reserpine, and one was on placebo (second trial, following a first trial on the high dose).

Two patients did not return for evaluation. Both were on the high dose of reserpine (first trial for one patient, second trial for the other patient, following a first trial on placebo).

It is of interest for purposes of both drug testing and drug administration with such a population that taking inert pills initially seemed to help patients tolerate the drug itself better, regardless of whether the trial on placebos was followed by a trial on the low or the high dose of the drug. (Of the seven who had placebo on the first trial and completed the experiment, three received the high dose on the next trial.) Presumably, the act of being given something by a physician trying to help enables the patients to develop initially either a feeling of confidence in or obligation toward the physician, if the medication per se does not produce any effects which might interfere with the development of this feeling. If the feeling is permitted to develop for four weeks, as in this study, then it apparently helps to sustain the patients through a later period of drug-induced physiological effects, which may per se increase patients' anxiety.

The possibility also existed that those who failed to complete the experiment

differed initially from the others in terms of the variables studied, and this was checked, as in Table 2.

Although the mean scores are somewhat higher for the drop-out group on all three categories, none of the differences among

TABLE 2.—A Comparison of Those Who Did and Those Who Did Not Complete the Experiment According to Initial Blood Pressure, Pulse, and Questionnaire Scores

| | Blood Pressure (Systolic) Mean | Pulse Mean | Questionnaire Scores Mean |
|------------------------------|--------------------------------------|---------------|---------------------------------|
| Dropped out (N=12) | 119.8 | 86.5 | 36.0 |
| Completed experiment..... | 116.9 | 81.3 | 29.7 |

the groups reached a level of statistical significance; so the differences may well be the result of random sampling influences.

Response to Placebos

The generally favorable response of our psychiatric outpatients to placebos has been reported in a previous study.⁵ Patients tended then to report less symptomatic distress while on placebos than they had had prior to the experiment. The same result occurred in this study. In addition to the 14 patients who completed the experiment, 3 of the drop-outs also completed a trial on placebos. Those 17 patients had an average distress score of 33.5 before the experiment and 23.2 following placebos. The difference is significant at the 0.01 level of confidence.

Only 4 of the 17 patients reported increased distress following placebos, and all 4 had had a trial on reserpine prior to a trial on placebos. Of the four, two showed a definite favorable response to reserpine. It may be that a trial on an active agent, especially if it produces effects satisfying to the patient, enables him to be more discriminating of an inert agent, which is then more likely to be experienced as unsatisfactory. By contrast, all nine patients who received placebos as their first medication reported a reduction in symptomatic distress.

Placebos were generally accompanied by

lower blood pressure readings as well (systolic; $P=0.05$). Pulse rates for the 17 were also lower generally, but not at a statistically significant level. If we consider only those patients receiving placebos on the first trial, then pulse rate, too, was significantly lowered ($P=0.05$).

The tendency for blood pressure and pulse readings to decrease with repeated measurement may itself account for the lowered readings obtained in these measures, although the fact that measurements were taken four weeks apart, and that symptomatic distress also decreased, suggests that the reductions probably represented an integral aspect of the response to placebos.

Comparison of Responses to Reserpine and Placebo

Evaluation of the effectiveness of reserpine was made by comparing it with placebos rather than with the condition of the patient at the onset of the experiment because of the generally favorable response to placebos. The average distress scores for the 14 patients who completed the study, based on all items in the questionnaire, were 22.9, 21.4, and 20.9 for the placebos, low-dose, and high-dose trials, respectively. Analysis of variance, taking into account the time in the sequence when each medication was given, indicated that the differences between the responses to the medications were not statistically significant. As compared with the placebo trial, 6 of the 14 had less distress on the low dose, and 7 had less on the high dose; 11 of the 14 had lower pulse rate on both the high and the low dose; 11 of the 14 had lower blood pressure on the low dose; 10 of the 14

had lower blood pressure on the high dose. For the placebo, low dose, and high dose, respectively, the average blood pressures (systolic) were 110.5, 104.0, and 104.0; the average pulse rates 78.6, 69.4, and 70.0. Thus, for the group as a whole, the general effect was for the drug to lower blood pressure and pulse rate, but not symptomatic distress.

An item analysis of the questionnaire revealed a significant decrease in distress for the group as a whole on only one item ($P=0.05$). This was one of the items in our Obsessive-Compulsive-Phobic Scale: "Did bad thoughts or feelings keep pushing themselves into your mind?" Analysis of the four scales (Table 3) indicated no statistically significant reduction in distress for any scale.

Although the group scores seem to favor reserpine with regard to the Depressive and the Obsessive-Compulsive-Phobic Scales, in neither case do the differences reach a statistically reliable result. Similarly, although Side-Effects scores seem to show a progressive increase with reserpine, the difference is not statistically significant. Complaints of nasal stuffiness and excessive sleepiness were most responsible for the increases in Side-Effects scores with reserpine.

It was possible to study each subject in the sample separately, as though each case constituted an experiment in its own right. Of the 14 cases so considered, 3 showed considerable reductions in distress when taking reserpine as compared with results with placebo. The reduction in two of them was significant beyond the 0.01 level, while the third approached, but did not quite reach, the 0.05 level of significance. In all

TABLE 3.—Group Scores on the Questionnaire Scales

| No. of Scale Items | | Placebo | | Low Dose | | High Dose | |
|--------------------------|----------------------|----------------|------------------------|----------------|------------------------|----------------|------------------------|
| | | Total Score | Mean Score per Item | Total Score | Mean Score per Item | Total Score | Mean Score per Item |
| 6 | Anxiety..... | 60 | 10.0 | 57 | 9.5 | 57 | 9.5 |
| 10 | Depression..... | 106 | 10.6 | 83 | 8.3 | 94 | 9.4 |
| 5 | Irritability..... | 50 | 10.0 | 38 | 7.6 | 48 | 9.6 |
| 6 | Obs.-Comp.-Phob..... | 60 | 10.0 | 44 | 7.3 | 45 | 7.5 |
| 6 | "Side-effects"..... | 29 | 4.8 | 42 | 7.0 | 53 | 8.8 |

RESERPINE AND PLACEBO

three cases, the doctors interviewing the patients were able to observe some difference in the patient's clinical condition and could predict with a fair degree of confidence whether the patient was taking reserpine or placebo. These patients themselves were also quite aware of the differences in their condition during the various four-week periods.

The questionnaire of the two patients who showed definite improvement were an-

and both showed a significant decrease in the severity of these symptoms while on reserpine. In all scales, as can be seen from Tables 3 and 4, there was very little difference between the distress-alleviating efficacy of the high and the low doses of the drug. Patient C, who also seemed to do better on reserpine, was never scored high enough on any single scale to permit statistical evaluations of this type.

TABLE 4.—Questionnaire Scale Scores of the Two Patients Responding Favorably to Reserpine

| Medication* Patient | Anxiety Scale 18 | | | Depressive Scale 30 | | | Obsessive- Compulsive- Phobic Scale 18 | | | Irritability Scale 15 | | |
|------------------------|------------------------|---|----|---------------------------|----|----|---|---|----|-----------------------------|---|----|
| | H | L | Pl | H | L | Pl | H | L | Pl | H | L | Pl |
| A..... | 2 | 3 | 11 | 3 | 10 | 23 | 6 | 4 | 17 | 2 | 2 | 1 |
| B..... | 6 | 2 | 7 | 3 | 6 | 15 | 3 | 6 | 7 | 4 | 6 | 12 |
| Significance A..... | P0.06 | | | P0.01 | | | P0.01 | | | NS† | | |
| of differences B..... | NS† | | | P0.01 | | | NS† | | | P0.01 | | |

* H=high dose; L=low dose; Pl=placebo.
† NS=Not significant.

alyzed in terms of the diagnostic categories built into them, with the thought that a common diagnostic pattern might be found which would distinguish these patients as favorable reactors to reserpine. However, they differed considerably, as can be seen in Table 4.

Patient A was male; Patient B, female. Most striking in the case of Patient A was the severity of his obsessive-compulsive-phobic symptoms. On placebo, severity of these symptoms were scored 17, the maximum possible being 18. On symptoms indicating irritability, he scored 1 out of a possible maximum of 15 while on placebos. In contrast, irritability was the salient syndrome for Patient B, who scored 12 of a possible 15 while on placebos, whereas on the Obsessive-Compulsive-Phobic Scale she scored much lower than Patient A. Patient A also was higher in Anxiety than Patient B and showed a significant reduction in Anxiety and Obsessive-Compulsive-Phobic symptoms, whereas Patient B showed a significant reduction in Irritability.

The Depressive Scale represented the main symptom complex common to both patients. Both reached at least 50% of the maximum possible score while on placebo,

Comment

Although many reports* on the use of reserpine in psychiatric conditions have appeared, relatively few have included placebo controls in the design of the experiment; and, of these, most have been concerned with hospitalized psychotic patients. Recently Davies and Shepherd⁹ have administered reserpine to one group of previously hospitalized neurotic patients and placebos to a separate, but similar, group. Their findings for the patient group as a whole favored reserpine over placebo. In several individual patients a response to placebo was noted. This placebo effect, or non-specific response, has been noted by other investigators.† Were one to consider the placebo effect to be confined to an inert substance given to the patient in the form of a pill, one might assume this variable to be controlled by the inclusion of a placebo, i.e., an inert pill, in the experimental design. However, in any relationship there occur many nonspecific or placebo effects.⁶ This point is stressed to emphasize our opinion that we have by no means controlled

* References 4, 7, 8.

† References 5 and 10.

all placebo effects solely by our inclusion of an inert substance in the design. Rather, we have attempted to control a portion of the variables referred to as placebo effects, and a portion assuming particular importance in comparison with a hypothetically potent substance—in this case, reserpine.

In trying to place a value on reserpine in the treatment of our psychiatric outpatients, we had to consider the following factors:

1. Our patient sample was small to begin with ($N=26$).
2. Almost half the patients (12) failed to complete the experiment, mostly because of side-effects due to the drug.
3. Analysis of the data for the 14 patients who completed the experiment revealed no significant improvement for the group as a whole.
4. However, when considered individually, 2 of the 14 definitely responded favorably to the drug, and a third patient showed a favorable clinical response but one which did not quite reach a level of statistical significance.

If we had contented ourselves with simply analyzing the data for the group as a whole, we should have concluded that the drug was worthless for our patients, since no appreciable improvement for the group as a whole was manifested. This would be an erroneous conclusion, since it could be shown that two, possibly three, patients were benefited by the drug. The improvement rate might have been higher had fewer patients discontinued taking the drug. The evidence indicates that most of the 12 patients who dropped out might have been persuaded to remain in the experiment if they had been given low, gradually increasing doses at the beginning. Perhaps, if they had originally had more confidence in the physician as the dispenser of a new therapeutic agent, they might have continued. Failure to provide for these contingencies must be attributed to the experimental design employed rather than to the drug itself. Furthermore, our outpatients comprise a heterogeneous population, and benefits which are specific to a few may be obscured by lack of benefit to, or even noxious effects on, the majority of the group. A single therapeutic agent should not be expected to be specific to all the types of illness likely

to be represented in such a sample. Thus, in undertaking research on therapeutic agents in a psychiatric population like ours, the experimental design should be so arranged as to permit statistical analysis of each case separately.

We find the evidence of any demonstrated successes encouraging, warranting further research with the drug. Presumably, the next step would be to try to discover what characterizes the type of patient who does respond favorably to the drug. If, as in our small sample, this type of patient really comprises 14% of outpatient populations such as ours, effective therapy of this group by a drug would provide a considerable boon both to these patients and to the clinics they frequent.

In our effort to obtain some leads on the latter problem, we found indications that the characterization of favorable responders to the drug may not be a simple matter. Symptomatically, at least, our two favorable responses differed considerably, one characterized by a saliency of obsessive-compulsive-phobic features, the other by hyperirritability. Perhaps the factors making for the favorable response to reserpine is not necessarily expressed in a given set of symptomatic manifestations. However, we did find that amelioration of an obsessional symptom occurred for the group as a whole. This symptom was, "Did bad thoughts or feelings keep pushing themselves into your mind?" Thus, we cannot discount symptoms altogether.

In analyzing the data for these two patients, we discovered that they had evidenced moderate distress with regard to symptoms which we had called "depressive," and that these symptoms were ameliorated in both. We were interested in this finding, since there appears to be considerable confusion whether reserpine is of value in alleviating depressive symptomatology or not. Some reports, notably those of Noce and associates,⁸ stress alleviation. Others[†] indicate that reserpine has little value, and sometimes

† References 11-15.

deleterious effects, in the treatment of those persons showing prominent depressive features.

It is not our intent to attempt to bring clarity to this confusion, but, rather, to emphasize anew that the confusion stems, in a large measure, from a limited understanding of the factors and processes involved in the behavioral manifestations of "emotion." Clinical inferences, obtained from the behavioral reactions of patients, have come to be grouped into diagnostic categories—depressive, obsessive, phobic, etc. There is a tendency to consider these nosological groupings as individual entities.

In our study, we attempted to record the distress or discomfort of individual patients. In designating the subscales, we have used traditional names based on the diagnostic categories to which, supposedly, the questions refer; and, in the discussion, we use these designations for order in presentation. For example, in this study, depressive symptomatology is based on 10 questions designed to elucidate certain aspects of the "depressive reaction process." We have not encompassed all manifestations. It is not to be construed that our experiment tested the effects of reserpine on Depression, on Anxiety, or the Obsessive-Compulsive-Phobic state.

Actually, our Depressive subscale may have simply measured a subject's characteristic response to any illness, a secondary response rather than primary symptoms of a disease process. Specifically, in the two cases statistically benefited by reserpine, the depressive symptoms, viz., poor appetite, fatigue, feeling of 'hopelessness, sadness, poor concentration, and worry, may have represented the patient's reaction to his illness, which lay in another area. §

Our data afforded us an indirect means of checking on this hypothesis. Three patients had shown side-effects with the drug, yet completed the experiment. It was reasoned that a "toxic" response to the drug could be thought of as a "primary illness"

in these cases, and that it should therefore be accompanied by an increase in the secondary, depressive symptoms if the hypothesis was true.

Two of the three patients had increased scores on the Side-Effects Scale, the increase being significant at the 0.01 level. One of the two also had considerably higher scores on the Depressive Scale as predicted, this difference also reaching significance at the 0.01 level. The second patient also showed increased scores on the Depressive Scale, but they were not statistically significant. The third patient showed increased scores on both the Toxic and the Depressive Scales, but neither reached a level of statistical significance, although both were in the expected direction. Thus, the hypothesis seems to have merit, enabling us to predict a finding which would not otherwise have occurred to us.

Summary and Conclusions

Reserpine, in doses of 1.5 and 4.5 mg. per day, was compared with placebos.

Of 26 patients, 12 failed to complete the experiment because they received the high dose too soon, or because they were not adequately prepared for side-effects of the drug, or because they habitually responded in a negative or overreactive way to medications.

Patients generally experienced a moderate alleviation of distress while taking placebos. However, if they had had a prior trial on reserpine, and especially if they had had a favorable response to the medication, they were less likely to show the usual placebo effect.

Two patients experienced pronounced relief of distress on reserpine as compared with placebo. A third improved clinically but not to a statistically significant degree.

For the group as a whole, distress was relieved for only one symptom: "Did bad thoughts or feelings keep pushing themselves into your mind?"

It was concluded that further experiment with the drug was warranted to determine

§ Dr. Lester H. Gliedman made this suggestion.

the characteristics of those psychiatric outpatients who respond favorably to the drug.

It was concluded that research on any therapeutic agent for heterogeneous psychiatric population should be so designed as to permit a separate statistical analysis of each patient's response to the agent. In this way, possible favorable results will not be obscured, as they might be in research designs, which evaluates only the response to the agent of the group as a whole.

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Personal Stresses in Relation to Psychiatric Diagnosis and Treatment

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Introduction

Certain experiences of early childhood are widely believed to be capable of permanently distorting an individual's personality. In the later course of life people encounter circumstances that frustrate, humiliate, or grieve them, and these, too, may conceivably distort their personalities. It is convenient to apply the term personal stresses to all such experiences and circumstances that may have a more or less permanently adverse effect on a person's behavior. The term is necessarily a little vague in denotation because of the heterogeneity of the experiences and circumstances, but it is employed in a sense analogous to the use of stress in physics; it disregards the person's reaction to the experience or circumstances, which, on the same analogy, would be termed a strain. Thus, if a person lived during the late war in a street that had several direct hits within a short period, he would be said to have undergone abnormal bombing stress, whether his own reaction was one of apprehension, anger, or indifference. The view is sometimes maintained that among psychiatric patients differences in diagnostic status or response to treatment arise from differences in exposure to these personal stresses. The aim of the following investigation was to take the first step toward verifying such a hypothesis, that of finding out whether in fact there are statistically

significant differences in the incidence of the stresses. It is necessary to establish this before going on to the more difficult etiological question whether the personal stresses act as primary causes in their own right or are, rather, the consequences of already existing pathological behavior or a pathological genotype, so that their effect is at most exacerbating.

List of Personal Stresses

A check list of personal stresses was compiled from suggestions made in the literature or in private discussion, and this was amplified by a number of analogous possibilities. It is as follows:

A. Earliest Childhood

1. Abnormal birth
2. Bottle feeding
3. Weaning difficulties
4. Lax toilet training
5. Strict toilet training
6. Late establishment of bowel control
7. Late establishment of bladder control
8. Unusual feeding difficulties

B. Childhood in General

9. Lack of affection from mother
10. Overaffection from mother
11. Lack of affection from father
12. Overaffection from father
13. Orphan or not brought up by parents
14. Early death of mother (patient under 10)
15. Early death of father (patient under 10)
16. Separation from mother while under age of 5
17. Illegitimacy
18. Divorce or separation of parents
19. Abnormal discord of parents without separation
20. Abnormal strictness of mother
21. Abnormal laxness of mother
22. Abnormal strictness of father
23. Abnormal laxness of father
24. Abnormal economic stresses in family
25. Only child
26. Only child of that sex

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27. Objective superiority of other sibling in any regard
 28. Other sibling preferred by mother
 29. Other sibling preferred by father
 30. Early death of sibling
 31. Hostile attitude of playmates and schoolmates
 32. Economic status of family below environment
 33. Economic status of family above environment
 34. Educational status of family below environment
 35. Educational status of family above environment
 36. Racial or cultural status of family divergent from environment
 37. Religious views of family divergent from environment
 38. Political views of family divergent from environment
 39. Marked alterations in family status
 40. Unusual indoctrination of sexual guilt in childhood
 41. Late onset of voice change or menarche
 42. Preference for opposite sex as playmates
 43. Abnormal amount of physical illness in childhood
- C. School
44. Poor academic success
 45. Poor athletic success
 46. Hostile attitude of teachers
 47. Special examination stresses
 48. Changes of status in changing schools
 49. Abnormal amount of physical illness in adolescence
 50. Indoctrination of sexual guilt in adolescence
 51. Preference for companions of same sex in adolescence
 52. Parent of opposite sex more influential in role taking
- D. Occupation
53. Below ability
 54. Above ability
 55. Below family status
 56. Above family status
 57. Out of conformity with patient's interests
 58. Objective occupational factors markedly frustrating
 59. Unfavorable attitude of superiors
 60. Others promoted or preferred to marked degree
 61. Hostile attitude of work mates
 62. Marked changes in economic or occupational status of patient
 63. Unemployment or similar stress to unusual degree
 64. Unusual stresses over adult examinations
- E. Sexual and Marital Life
65. Unusual frustrating factors in premarital sexual situation
 66. Preference for companions of same sex in adult life
 67. Much more strongly sexed than spouse
 68. Much less strongly sexed than spouse
 69. Marked infidelity of spouse
 70. Incompatibility of outlook and interests with spouse
 71. Conflict with spouse over running of home and interest in it
 72. Conflict with spouse over upbringing of children or interest in them
 73. Lack of affection from spouse
 74. Adverse effect of monetary difficulties on marriage
- F. Miscellaneous Adult Stresses
75. Exposure to different cultural environment after leaving family
 76. Abnormal amount of physical illness in adult life
 77. Abnormal number of major accidents
 78. Abnormally short in height
 79. Abnormally tall
 80. Abnormally ugly or plain in features
 81. Socially evident physical defects
 82. Privately known physical defects
 83. Left-handedness
 84. Abnormally fat
 85. Abnormally thin
 86. Abnormally muscular
 87. Special cognitive defects (e. g. deafness, difficulty in verbalization)
 88. Abnormal battle stress in war
 89. Abnormal bombing stress in war
 90. Marked frustration in war service
 91. Other unusual stresses
- Patients Investigated and Comparisons Made**
- Information was obtained on the presence or absence of the foregoing stresses in the history of the first 100 informal patients admitted to Fairdene Hospital since April 1, 1953. This information was secured from the patient by one of us (V. M. J.). The total number of stresses was summed for each patient. Subsequently the patients were classified diagnostically in accordance with the opinion of the senior psychiatrist in charge of the case. They were also classified by their therapeutic responses at the time of discharge.
- It may be noted here that during the year following April 1, 1953, a total of 529 patients, of largely good prognosis, were treated in Fairdene Hospital, which is outside the jurisdiction of the British Lunacy and Mental Treatment Acts. This figure includes the first 100 especially studied here. In another investigation, to be published elsewhere, comparisons were made as to the effects of

various treatments and treatment combinations on the total sample of 529. The evidence suggested that, within each diagnostic group, the particular form of treatment applied did not significantly affect the patient's duration of stay in hospital or his status (recovered, relieved, or unimproved) at discharge. Therefore it was decided in this inquiry to consider therapeutic response irrespective of treatment applied. Another problem considered in this larger investigation was whether, within the various diagnostic groups, the psychiatrist's choice of treatment was influenced by duration of illness before admission or by the patient's age. The only significant difference was within the schizophrenic group, where those treated with ECT alone had a higher mean age than those treated with deep insulin coma alone.

Therapeutic response was assessed by one of us (R.K.F.) in accordance with rather strict criteria, as follows:

Recovered: Free from symptoms and able to resume work at the previous occupational level
Relieved: Exhibiting various symptoms, but able to leave hospital and resume work at or below the previous occupational level

Not improved: Neither of foregoing

The patients were then grouped broadly in diagnostic categories in accordance with the International Statistical Classification,¹ as follows: psychoneurotics (23 cases: 5 recovered, 14 relieved, 4 not improved); depressives (19 cases: 7 recovered, 11 relieved, and 1 not improved), and schizophrenics (51 cases: 3 recovered, 38 relieved, and 10 not improved). Psychopaths (3), organic psychotics (3) and puerperal psychotics (1) were omitted, owing to their infrequency, from the comparisons, but were included when the total number of stresses was correlated with other variables.

The following comparisons were made for each of the 91 personal stresses and for the total number of stresses.

A. Diagnosis

1. Psychoneurotic *vs.* Depressive
2. Psychoneurotic *vs.* Schizophrenic
3. Depressive *vs.* Schizophrenic

B. Response to Treatment

1. Psychoneurotic Recovered *vs.* Not Recovered
2. Psychoneurotic Improved *vs.* Not Improved
3. Depressive Recovered *vs.* Not Recovered
4. Schizophrenic Improved *vs.* Not Improved

Not Recovered, denotes Relieved plus Not Improved. Improved denotes Recovered plus Relieved. The omitted possibilities were excluded because of their small frequencies. The statistical significance of differences was tested by χ^2 , or, if necessary, by the exact method. In the case of total number of stresses it was tested by "student's" *t*-ratio.

Results

Relation to Chance Expectancy

In so many comparisons a certain number would be statistically significant at the 5% and 1% levels by chance alone. Table 1 shows the numbers in each section of the check list that might be thus expected and those actually obtained for the diagnostic comparisons. Table 2 gives the same information for the response comparisons.

TABLE 1.—Significant Differences in Diagnostic Comparisons: Chance Expectancy and Obtained Frequency

| Section of Check List | No. of Comparisons | No. Expected | | No. Obtained | |
|-----------------------|--------------------|--------------|----|--------------|----|
| | | 5% | 1% | 5% | 1% |
| | | Levels | | Levels | |
| Earliest childhood | 24 | 1 | 0 | 2 | 0 |
| Childhood in general | 105 | 4 | 1 | 8 | 1 |
| School | 27 | 1 | 0 | 1 | 0 |
| Occupation | 36 | 2 | 0 | 0 | 0 |
| Sexual & marital | 30 | 2 | 0 | 0 | 0 |
| Miscellaneous adult | 51 | 2 | 1 | 0 | 0 |
| Totals | 273 | 12 | 2 | 11 | 1 |

TABLE 2.—Significant Differences in Response Comparisons: Chance Expectancy and Obtained Frequency

| Section of Check List | No. of Comparisons | No. Expected | | No. Obtained | |
|-----------------------|--------------------|--------------|----|--------------|----|
| | | 5% | 1% | 5% | 1% |
| | | Levels | | Levels | |
| Earliest childhood | 32 | 2 | 0 | 0 | 0 |
| Childhood in general | 140 | 6 | 1 | 3 | 3 |
| School | 36 | 2 | 0 | 0 | 1 |
| Occupation | 48 | 2 | 0 | 0 | 0 |
| Sexual and marital | 40 | 2 | 0 | 0 | 0 |
| Miscellaneous adult | 68 | 2 | 1 | 2 | 0 |
| Totals | 364 | 16 | 2 | 5 | 4 |

Only in the comparisons of the section Childhood in General are the obtained frequencies definitely above chance expectancy. There is a marked tendency running through most of the other sections for the significant differences to be below expectation. The interpretation of this last finding is obscure; perhaps it derives from the technique of ascertainment. At any rate, these findings indicate that only moderate weight can be attached to the statistical significance of any separate comparison.

Statistically Significant Comparisons

The following significant differences were found. Those significant at the 1% level are indicated by an asterisk.

A. Diagnosis

1. Psychoneurotic *vs.* Depressive
(commoner in Depressives)
- (41) Late onset of voice change or menarche
2. Psychoneurotic *vs.* Schizophrenic
(commoner in Psychoneurotics)
- (7) Late establishment of bladder control
- (13) Orphan or not brought up by parents
- (20) Abnormal strictness of mother
(commoner in Schizophrenics)
- (11) Lack of affection from father
- (33) Economic status of family above environment

ment

- (45) Poor athletic success
3. Depressive *vs.* Schizophrenic
(commoner in Schizophrenics)
- (1) Abnormal birth
- (19) Abnormal discord of parents without separation
- (21) Abnormal laxness of mother
- (26)* Only child or only child of that sex
- (32) Economic status of family below environment

ment

B. Response to Treatment

1. Psychoneurotic Recovered *vs.* Not Recovered
(commoner in Not Recovered)
- (9)* Lack of affection from mother
- (28) Other sibling preferred by mother
- (50)* Indoctrination of sexual guilt in adolescence

2. Psychoneurotic Improved *vs.* Not Improved
None.

3. Depressive Recovered *vs.* Not Recovered
(commoner in Recovered)
- (22) Abnormal strictness of father
- (27) Objective superiority of other sibling in any regard

(commoner in Not Recovered)

- (91) Other unusual stresses
4. Schizophrenic Improved *vs.* Not Improved
(commoner in Not Improved)
- (24)* Abnormal economic stresses in family
- (41)* Late onset of voice change or menarche
- (83) Left-handedness

Total Number of Stresses:**Correlations with Certain Variables**

There were no statistically significant differences in regard to total number of stresses. It might be thought that the addition of such heterogeneous items is a non-sensical procedure. Nevertheless, the summation appears to be meaningful. This

variable was correlated (product-moment formula) for the 100 cases with scores on the Wechsler-Bellevue Vocabulary, the Wesman Verbal Reasoning and Numerical Tests,² the weighted cluster-scores of the Wittenborn Quantified Multiple Psychiatric Diagnostic System³ and the raw scale-scores of the Minnesota Multiphasic Personality Inventory. Out of the 26 correlations calculated, no fewer than 16 were statistically significant. These were the two Wesman tests (0.237 and 0.217); the Wittenborn cluster-scores on Manic State (0.313), Schizophrenic Excitement (0.204) and Hebephrenic Schizophrenic (0.225), and the Minnesota scales Lie (-0.376), K(-0.327), Validity (0.377), Hypochondriasis (0.226), Depression (0.285), Hysteria (0.300), Psychopathic Deviate (0.508), M/F, in females only (0.259), Psychasthenia (0.376), Schizophrenia (0.536), and Hypomania (0.468). The psychiatric terms in the Wittenborn and Minnesota tests cannot be taken as having their usual connotations, but it may be accepted that the height of score on any of them tends to correspond to degree of behavioral pathology. This is especially true of the Wittenborn cluster scores on Manic State, Schizophrenic Excitement, and Hebephrenic Schizophrenic, and the Minnesota Psychopathic Deviate, Schizophrenia, and Hypomania scores. With several of these the correlations are quite substantial. The general interpretation would appear to be that the more marked the behavioral pathology, the greater is the number of stresses experienced by the patient. The causal relationship here, of course, is a matter for another inquiry. The low significant correlations with two tests of abilities may arise because rather fuller information about personal stresses was obtained from the more intelligent patients. This is hardly likely to have had an important influence on the comparisons of this inquiry, since in only one of the seven contrasts were there statistically significant differences in the tests of ability; viz., the Psychoneurotic Not Improved had signifi-

cantly higher scores than the Improved on one of the three tests.

Comment

The negative findings are more numerous than the positive ones. The personal stresses in which no significant differences were found include a number on which considerable emphasis is placed by some psychiatrists: bottle feeding; weaning difficulties; lax toilet training, strict toilet training; late establishment of bowel control; unusual feeding difficulties; overaffection from mother; early death of mother or father; separation from mother while under the age of 5; unusual indoctrination of sexual guilt in childhood; preference for opposite sex in childhood playmates, and parent of opposite sex more influential in role taking.

Significant differences were sparsely distributed over the items instead of massing on one or two. This, and the fact that their total number was below expectancy by chance, may indicate that only a limited importance can be attached to them. It is, however, also possible that the rather extensive check list of 91 items has introduced an unnecessary negative bias. The importance of these findings should become clearer once the investigation into personal stresses in a nonpsychiatric patient population, at present being undertaken, is available for comparison. A few of the statistically significant differences are suggestive and would probably repay further investigation. Particular attention might be drawn to two sets that have a certain coherence. The first consists of four stresses that might be genotypical in nature: ab-

normal birth, late establishment of bladder control, late onset of voice change or menarche, and left-handedness. The other comprises six stresses relevant to parental control and attitudes: abnormal strictness of father, abnormal strictness of mother, abnormal laxness of mother, lack of affection from father, lack of affection from mother, and abnormal discord of parents without separation.

Summary

The term personal stresses is defined and a check list of these presented.

Information is obtained on the incidence of such stresses in the history of the first 100 informal patients admitted to Fairdene Hospital since, April 1, 1953, and the significance of diagnostic and prognostic differences is tested statistically. The negative findings are more numerous than the positive ones.

Some significant differences are revealed, suggesting further investigation.

From the present investigation the total number of stresses appears to be a meaningful summation, increasing with the degree of pathological behavior.

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Intracerebral Procaine as Prognostic Test for Prefrontal Lobotomy

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Bailey, Small, and Ingraham¹; Van Wagenen and Liu,³ and Putnam* have reported studies with psychotic populations which suggest that it is possible to predict the effects of prefrontal lobotomy by means of the clinical behavior resulting from procaine-induced narcotization (procaine block) of the prefrontal area. The experiment reported in this paper has been carried out, in part, in an attempt to verify these findings. Since psychological test data may be expected to parallel clinical behavior, a second related question dealt with in the present study is concerned with the degree of similarity between psychological test changes following intracerebral injection of procaine and those following prefrontal lobotomy. Third, an attempt was made to ascertain to what extent clinical changes ascribed to procaine might be due to the other drugs utilized in the operative procedure. The last question was attacked from two points of view: changes in psychological test scores and behavioral data (clinical status).

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Roger Cheney, M.D., and Benjamin J. Morrison, M.D., cooperated in performing the operations described in this study. David D. Clancy and Frank Politzer, Ph.D., former members of the psychology department, were primarily responsible for the selection of Groups D and C and wrote many of the preliminary analyses. Arnold Trehub, Ph.D.; Arthur S. Tamkin, Ph.D., and Cesareo D. Peña, Ph.D., staff clinical psychologists, made critical reviews of the paper in its various drafts.

*Himwich, H.: Personal communication to the authors.

Subjects

Three groups of subjects, all male white Schizophrenics, were as closely matched for age, diagnosis, and chronicity as possible. The matching statistics are given in Table 1. Clinical expedience forced a reduction in the number of cases available for this investigation. However, it was felt that the results might be of some value to workers interested in prognostic studies.

TABLE 1.—Matching Statistics for the Experimental Groups and the Control Group

| Variable | Group IP (Intracerebral Procaine) | Group D (Drug) | Group C (Control) |
|---------------------------|---|-------------------|----------------------|
| Age, yr. | | | |
| Mean | 31.00 | 30.00 | 30.83 |
| S.D. | 5.69 | 2.60 | 6.40 |
| Education, yr. | | | |
| Mean | 13.00 | 12.83 | 12.50 |
| S.D. | 2.68 | 2.32 | 2.95 |
| Chronicity, mo. | | | |
| Mean | 37.67 | 33.00 | 31.00 |
| S.D. | 12.97 | 20.75 | 40.09 |
| Diagnostic classification | | | |
| Catatonic | 50.00% | 50.00% | 50.00% |
| Paranoid | 33.33% | 33.33% | 33.33% |
| Unclassified | 16.67% | 16.67% | 16.67% |

Group IP (Intracerebral Procaine) consisted of six patients who were given intracerebral injection of procaine according to the following scheme:

Burr holes were made in an area on the forehead about 3 cm. above the orbital ridge and about 2.5 cm. from the midline in the plane of the pupil. Approximately four days were allowed for the patients to recover from this procedure. On the night before injection of procaine, at 9:00 p. m., the patients were given orally a preoperative hyp-

PROCAINE TEST FOR PREFRONTAL LOBOTOMY

notic consisting of 0.15 gm. of pentobarbital (Nembutal) sodium. At 11:00 a.m. on the day of the operation patients were given 0.15 to 0.30 gm. of pentobarbital sodium. At 1:00 p.m., following local anesthesia (procaine-epinephrine), 3 cc. of procaine hydrochloride was injected bilaterally through the burr holes directly into the brain.

Five patients from Group IP were later lobotomized; three received open Lyerly-Poppen lobotomies, and two were lobotomized by the Livingston method. These five patients will be referred to as the IP-L Group.

Group D (Drug) consisted of six patients who did not receive burr holes or intracerebral injection of procaine. The physician's report describes their "operation" as follows:

Patients had the usual preoperative preparation, consisting of 0.1 gm. of pentobarbital sodium at bedtime the night before operation and 0.2 gm. of pentobarbital sodium at 11:00 a.m. on the day of the operation. Patients were brought into the operating room at 1:00 p.m. With the patient in the recumbent position, the skin of the forehead was cleansed with tincture of iodine and alcohol. Immediately after, 1.5 cc. of procaine hydrochloride solution containing epinephrine hydrochloride in a concentration of 1:200,000 was injected subcutaneously in an area on the forehead about 3 cm. above the orbital ridge and about 2.5 cm. from the midline in the plane of the pupil, on the ridge side and on the left side. The sites of injection were then covered with Band-Aids and the patient returned to the ward.

Group C (Control) consisted of six patients who received neither burr holes nor drugs of any kind for the duration of the experiment.

Experimental Procedure

All IP patients were individually tested about noon on the day before treatment, within one hour after the intracerebral injection of procaine, and again 24 hours following treatment. Drug and control patients were individually tested at comparable intervals. The five IP-L patients, who were lobotomized, received the same battery of psychological tests immediately prior to and two weeks following lobotomy.[†]

The psychological test battery was made up of 29 measures of such functions as vocabulary, abstraction, memory, attention, motor speed, inhibition, social attitudes, and feelings about the

[†] Implicit here is an assumption that there is equivalence between psychological test status immediately following intracerebral injection of procaine and that two weeks following prefrontal lobotomy. This assumption, unwarranted at the onset of the study, appears to be justified to some extent by the statistical findings.

self. A description of the tests may be found elsewhere.² All tests were scored according to standard procedures. The quantitative scores were analyzed by ascertaining the statistical significance of the net change in means for any one group as compared with other groups from one testing to another. The experimental design is outlined in Table 2.

TABLE 2.—Design of the Experiment

| Comparison Groups | Time Interval |
|---|--|
| Group IP (intracerebral procaine) vs. Group IP-L (lobotomy) | Pretreatment-immediate post-treatment vs. Prelobotomy-two-week-post-lobotomy |
| Group IP (intracerebral Procaine) vs. Group D (drug) | Pretreatment-immediate post-treatment Pretreatment-24 hour post-treatment Immediate-24 hour post-treatment |
| Group IP (intracerebral procaine) vs. Group C (control) | Pretreatment-immediate post-treatment Pretreatment-24 hour post-treatment Immediate-24 hour post-treatment |
| Group D (drug) vs. Group C (control) | Pretreatment-immediate post-treatment Pretreatment-24 hour post-treatment Immediate-24 hour post-treatment |

At each examination, and, in addition, on the day following lobotomy, complete behavior notes were made by the examiner. These, together with nurses' and physicians' notes recorded in the clinical folders, were used for qualitative analyses of patients' behavior and judgments of clinical status at each testing period.

Results and Comment

It will be recalled that there were three general questions to be answered by this experiment: (a) the feasibility of using behavioral changes in patients receiving procaine-induced narcotization of the prefrontal area (procaine block) as prognostic indicators of changes following prefrontal lobotomy; (b) the degree of similarity in changes in test performance following procaine block and prefrontal lobotomy, and (c) the comparison of changes in psychological test scores and behavior following intracerebral injection of procaine, subcutaneous injection of procaine epinephrine, and no procaine. Each of these questions will be treated separately.

Prognostic Use of Clinical Status Following Procaine Block.—Examination of the clinical status based upon progress reports in the folders and psychologists' notes for the 24-hour period following intracerebral injection of procaine and for the 24-hour period following lobotomy, as well as a review of the clinical status of the lobotomized patients three months after operation[‡] yielded the following information: The response of the IP patients during the first 24 hours after treatment suggests a moderate to marked change for the better. The degree of improvement was a global estimate based on a four-point scale. For the most part, these same patients showed little change immediately following lobotomy, and only slight change, for the group as a whole, three months after lobotomy. The response of each of the five patients to the two treatments is summarized in Table 3.

With regard to specific kinds of behavior, the IP group showed reduced confusion and decreased delusional reactions immediately following intracerebral injection of procaine. These responses may have been due to the lessened anxiety arising from procaine block of the frontal lobes. These same patients had some reduction of confusion three months after lobotomy, but they evidenced no reduction in delusional reactions. From a global standpoint, there does not appear to be any relationship between the over-all clinical improvement following intracerebral injection of procaine and the clinical status following lobotomy, as can be seen from an examination of Table 3. It does not appear, therefore, that the response to procaine can be used as a prognostic indicator of the response of the same patient to prefrontal lobotomy, as has been suggested by earlier investigators.

Comparison of Test Changes Following

[‡]The period of three months after lobotomy was selected for clinical evaluation because previous experimentation[§] suggested that the most positive gains in our patient population might be expected at this time.

TABLE 3.—Degree of Clinical Improvement Following Procaine Block and Lobotomy

| Patient | Time Period | | |
|---------|----------------------|----------------------|--------------------------|
| | 24-Hour Postprocaine | 24-Hour Postlobotomy | Three-Month Postlobotomy |
| 1 | Moderate | None | Slight |
| 2 | Marked | Moderate | None |
| 3 | Moderate | None | Moderate |
| 4 | Moderate | None | None |
| 5 | Marked | None | Moderate |

Lobotomy and Intracerebral Procaine.[§]—

Comparison of test changes in the same patients following procaine block of the prefrontal area with changes following prefrontal lobotomy suggests that, in this sample of patients, all differences in the pattern of change can be explained on the basis of chance alone. A summary of all net changes obtained in this comparison is found in Table 4. It will be seen from an examination of the first column in Table 4 that the pattern of change in the IP-L group differs from the pattern of change in the IP group in one instance at the 0.05 level and in three instances at the 0.20 level or better. The probabilities that these results would be obtained by chance in a series of 28 tests are 0.76 and 0.94, respectively. The observed results are clearly chance fluctuations. However, as will be made evident in the next section, this apparent similarity only reflects the fact that in this sample of patients there was essentially no change in test performance, as compared with changes in control patients, following either procaine or lobotomy. The lack of change in psychological test performance following lobotomy finds support in the report of Winne and Scherer⁴ on another sample of lobotomized patients.

Comparison of Changes in IP, Drug, and

[§]A table comparing the change in the IP group from Pretreatment to Immediate Post-treatment with the change in the IP-L group from Prelobotomy to Two Weeks Postlobotomy has been deposited with the American Documentation Institute.

TABLE 4.—Summary of All Statistically Significant Net Changes*

| Test Measure | IP-L vs. IP Group | IP vs. Drug Group | | | IP vs. Control Group | | | Drug vs. Control Group | | |
|-----------------------|----------------------|-------------------|----------------|------------------|----------------------|----------------|------------------|------------------------|----------------|------------------|
| | | Pre. Immed. | Pre. 24 Hr. | Immed. 24 Hr. | Pre. Immed. | Pre. 24 Hr. | Immed. 24 Hr. | Pre. Immed. | Pre. 24 Hr. | Immed. 24 Hr. |
| Memory paragraph | | | | | | | | | | |
| Immediate | D† | | | U† | U | | | U‡ | | D |
| Delayed | | | | U† | | | | | | |
| Total | | | | U‡ | | | | U | | |
| Delay-immed. | U | | | | D | | | | | U |
| Visual memory | | | | | U | | | | | |
| Hard pairs | | D | | | D | | | | | |
| Digit span forward | | | | D† | | D† | | | D† | |
| Digit span reversed | | | | | | | | | | |
| Digit symbol | | | | | | | | | | U |
| Serial seven times | U | | D | D | | D | D | | | |
| Serial seven errors | | D | D | | | | | | | |
| Similarities | | | | | | | | | | |
| Categorization | | | | | | | U | | U | |
| Series completion | | | | U | | U | U† | | | |
| Shipley-Hartford | | | | | | | | | | |
| Attempts | | | | | | | | | | |
| Rights | | | U | | | | | D | D† | |
| Vocabulary | Not tested | | | | | | | | | |
| Finger dexterity | | | | | | | | U | | D |
| Downey inhibition | | | | | | | | | | |
| Total score | | | | U | | | | | | D |
| Trial 3-Trial 1 | | | | | | | | | | |
| Aversions test | | U† | | D | | | | | D | |
| Hildreth feelings | | | | | | | | | | |
| Feeling 1 | | | | | D | | | | | |
| Feeling 2 | | D | | | D | | U | | | |
| Energy | | D | | | D† | D | | | | |
| Work | | D | | | D‡ | | | | | |
| Outlook | | D† | | | | | | | | |
| People | | D | | | | U† | | | | |
| Mental | | | U | | | | | | D | |
| People 2 | | | | | | | | | | U |
| Number of $P < 0.05$ | 1 | 2 | 0 | 4 | 2 | 2 | 1 | 1 | 2 | 0 |
| Over-all significance | 0.76 | 0.43 | 1.00 | 0.06 | 0.43 | 0.43 | 0.77 | 0.77 | 0.43 | 1.00 |
| Number of $P < 0.20$ | 3 | 8 | 4 | 8 | 8 | 5 | 4 | 4 | 5 | 6 |
| Over-all significance | 0.94 | 0.21 | 0.86 | 0.21 | 0.21 | 0.72 | 0.86 | 0.86 | 0.72 | 0.54 |

* U indicates increased score; D indicates decreased score; . . . indicates no net change in score for the first group named in each comparison. All changes are significant at the 0.20 level or better.

† Individual net change significant at the 0.05 level.

‡ Individual net change significant at the 0.01 level.

Control Patients.||—Test Changes: Comparison of test changes in patients undergoing intracerebral injection of procaine with test changes in patients undergoing subcutaneous injection of procaine-epinephrine yielded negative results for the Pretreatment-Immediate Post-Treatment and Pretreatment-24 Hour Post-Treatment comparisons in that there were no more differences than would be expected to occur by the operation of chance alone. It will be seen from an examination of the last nine columns of Table 4 that the probabilities of obtaining the observed results are, in all but one set of comparisons, clearly chance. The single exception is found in the fourth column; the probability of obtaining four *t* values, each significant at the 0.05 level or better, out of a series of 29 tests is less than 6 times in 100. This set of comparisons is therefore presumed to be meaningful.

During the period from immediately following treatment to 24-hours post-treatment, the patients receiving intracerebral injection of procaine, as compared with the Drug patients, showed a statistically significant net increase in immediate, delayed, and total recall of meaningful material ($P < 0.02$, $P < 0.05$, $P < 0.01$, respectively) and, at the same time, showed a decreased memory for digits forward ($P < 0.05$). As compared with Drug patients, the IP group also showed trends in the direction of increased speed on mental arithmetic and increased ability in a test of abstraction ($0.05 < P < 0.20$) during the same time interval.

It seems possible that the relative increase in efficiency for the IP group as compared with the Drug group is a result of the reduction in anxiety, delusional reactions, and confusion which have been noted above. (The loss in Digit Span Forward is so

slight—a net loss of 0.33 digit—as to have no practical significance.) The fact that this increased efficiency does not appear immediately following intracerebral injection of procaine is suggestive of a delayed effect. This finds some support in a comparison of the mean change in the IP and D groups for the two testings following treatment: The IP group increased 0.2 memory from Pretreatment to Immediate Post-Treatment, and increased 4.1 memories from Immediate Post-Treatment to 24-Hour Post-Treatment; the Drug group increased 0.4 memory from Pretreatment to Immediate Post-Treatment and decreased 4.3 memories from Immediate Post-Treatment to 24-Hour Post-Treatment.

Although certain differences were noticed when comparison was made between IP and Drug patients, the magnitude of the changes within each of these groups is too small, in comparison with the standard error of measurement, to yield significant differences when either IP or Drug patients are compared with controls. That is to say, although IP and Drug patients behave differently from each other during the 24-hour period following treatment, the variation within each group fails to differ statistically from the variations observed in the control group.

Behavioral Changes: Qualitative analysis of the behavioral reports indicated that the IP and Drug groups showed very similar reactions 24 hours after they received treatment; both groups were more cooperative, friendly, alert, and calm and appeared able to work more effectively. Two interesting differences in the immediate reaction to treatment are noted, however. The IP patients were less deluded and less confused immediately following intracerebral injection of procaine, whereas the Drug patients became more deluded and appeared to respond much more slowly to the second administration of tests; at the same time, the Drug patients evidenced some mild speech difficulty. The immediate reaction in the Drug group is probably due to the sedative effect of the pentobarbital, while

|| Tables comparing the changes in the IP, Drug, and Control groups for the periods (a) Pretreatment-Immediate Post-Treatment, (b) Pretreatment-24 Hour Post-Treatment, and (c) Immediate-24 Hour Post-Treatment have been deposited with the American Documentation Institute.

the apparent alertness of this same group 24 hours after treatment may be due to the release from the sedative effect. That this slowing up was not observed in the IP group suggests that procaine block of the prefrontal area has some disinhibitory effects, possibly related to reduced anxiety.

Control patients showed only minimal changes in behavior throughout the course of the experiment. They became somewhat more outgoing in their relationships with the examiners and a little faster on tests of efficiency, changes which can be explained on the basis of familiarity with the examiners and the testing procedures. At no time, however, did they show any alteration in delusional reactions or degree of confusion.

Summary and Conclusions

An experiment has been carried out to explore (a) the feasibility of using behavioral changes in patients receiving procaine-induced narcotization of the prefrontal area as a prognostic indicator of changes following prefrontal lobotomy; (b) the degree of similarity of changes in test performance following procaine block and prefrontal lobotomy, and (c) the comparison of changes in psychological test scores and clinical behavior following intracerebral injection of procaine, subcutaneous injection of procaine-epinephrine, and no procaine.

The subjects for this experiment consisted of 18 male white schizophrenics, fairly well matched for age, education, chronicity, and diagnostic classification. The patients were divided into three groups of six patients as follows: Group IP (Intracerebral Procaine) received burr holes, preoperative sedatives, local anesthesia (procaine-epinephrine), and procaine injected directly into the frontal lobes; Group D (Drugs) received preoperative sedatives and procaine-epinephrine injected subcutaneously in the frontal region, and Group C (Controls) received no drugs of any kind. Five patients from Group IP were later lobotomized.

All IP patients were individually tested with a battery of 29 measures of vocabulary, memory, abstraction, intellectual efficiency, motor speed, and certain personality variables on the day before treatment, within one hour following treatment, and 24 hours following treatment. Drug and Control patients were individually tested at comparable intervals. The five IP-L patients were administered the same psychological tests immediately prior to and two weeks following lobotomy.

The results and conclusions listed below should be considered in the light of the small samples which were utilized:

1. Although all patients appeared to be less confused following either intracerebral injection of procaine or prefrontal lobotomy, there did not appear to be any prognostic relationship between the over-all clinical improvement in the same patients following the two treatment procedures.

2. There were no statistically significant changes in test performance following either intracerebral injection of procaine or prefrontal lobotomy in this sample of patients, as compared with the performance of control patients.

3. IP patients differed significantly from Drug patients only in the period immediately following treatment to 24 hours after treatment. It is suggested that the observed increase in tests of memory and intellectual efficiency is a delayed result of the reduction in anxiety, delusional reactions, and confusion noted in the behavior of the IP group.

4. Immediately following treatment, IP patients became less delusional and less confused, whereas Drug patients became more delusional and somewhat slower. At 24 hours after treatment both groups appeared friendly, alert, and able to work more effectively.

It is suggested that the immediate change in the Drug group is due to the sedative effect of pentobarbital, while the apparent alertness on the day following treatment is due to a release effect. That these changes were not noted in the IP group, which also received sedation, suggests that procaine in-

jected directly into the brain may also have some disinhibitory effects, possibly related to reduced anxiety.

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Books

Books Received

We acknowledge receipt of the following books. Only those books will be reviewed which the Editorial Board finds suitable for this journal.

- A Scientific Report on "The Search for Bridey Murphy."** Edited by Milton V. Kline, Ph.D. Price, \$3.50. Pp. 224. The Julian Press, Inc., 80 E. 11th St., New York 3, 1956.
- Great Men: Psychoanalytic Studies.** By Edward Hitschmann, M. D. Price \$4.00. Pp. 278. International Universities Press, Inc., 227 W. 13 St., New York 11, 1956.
- The Miracle of Lourdes.** By Ruth Cranston. Price, \$4.50. Pp. 286, with 12 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 36, 1955.
- The Prevention of Cruelty to Children.** By Leslie George Housden, O.B.E., M.D. Price, \$7.50. Pp. 406. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1956.
- Risk and Gambling: The Study of Subjective Probability.** By John Cohen and Mark Hansel. Price, \$3.50. Pp. 153, with 24 tables and 6 figures. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1956.
- Police Drugs.** By Jean Rolin. Price, \$4.75. Pp. 194. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1956.
- Being and Nothingness: An Essay on Phenomenological Ontology.** By Jean-Paul Sartre. Price, \$10. Pp. 638. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1956.
- The Legacy of Sigmund Freud.** By Jacob A. Arlow, M.D. Price, \$2.00. Pp. 96, with 1 illustration. International Universities Press, Inc., 227 W. 13 St., New York 11, 1956.
- Aspects de la psychiatrie moderne.** By Jean Delay. Price, 440 fr. Pp. 115. Presses Universitaires de France, 108 boulevard Saint-Germain, Paris, 1956.
- Hunterdon Medical Center.** By Ray E. Trussell. Price, \$3.75. Pp. 236. Harvard University Press, 44 Francis Ave., Cambridge 38, Mass., 1956.
- Sociology and the Field of Mental Health.** By John A. Clausen. Price, \$0.50. Pp. 62. Russell Sage Foundation, 505 Park Ave., New York 22, 1956.

Book Reviews

Psychopharmacology. N. S. Kline, Editor. Price, \$3.50. Pp. 165 plus x. American Association for the Advancement of Science, 1515 Massachusetts Ave., N. W., Washington 5, D. C., 1955.

This little book is the result of a symposium organized by the section on medical sciences of the American Association for the Advancement of Science and the American Psychiatric Association, presented at the Berkeley meeting, Dec. 30, 1954. It consists of ten papers and the ensuing discussion. The first three papers deal with reports of clinical observations of the use of chlorpromazine in both public and private mental hospitals, accurately reflecting the early disparity of results between these two areas for investigation. The next four papers deal primarily with results of the clinical application of reserpine. Both favorable and unfavorable reports are recorded, again reflecting the difference of opinion between workers in public versus private institutions that was prevalent at the time of the conference. The final three papers deal with the pharmacological aspect of the "tranquilizer" drugs and their relationship to the psychotomimetic drugs. The discussion following each of these three sets of papers served to emphasize the need for an attitude of cautious exploration and highlighted the pitfall of generalizing too soon from too few cases. In addition to reporting clinical results, most of the contributors seemed compelled to make some comment about the nature of action of these new drugs, tending to assume for their comments the same degree of validity as for their case reports. But few of the authors agreed. This underlines the unavoidable state of confusion characteristic of each new area of exploration. Because of the very newness of this field of psychopharmacology, and of the immense amount of investigation going on, this book has a very limited value as a source of treatment methods, for much of what was unknown or controversial a year and a half ago has been resolved with the passage of time and the accumulation of increasing evidence.

Annual Survey of Psychoanalysis. Vol. III. By John Frosch [and others]. Price, \$10. Pp. xvi+682. International Universities Press, Inc., 227 W. 13th St., New York 11, 1956.

The third "Annual Survey of Psychoanalysis" is somewhat late in appearing, since it deals with the literature of 1952. The survey views the most significant periodical literature of the year and reviews a few selected books. The material is considered under ten general headings, each with several subcategories. Without question, the editors have accomplished a prodigious task, for each paper is abstracted in considerable detail. In fact, in retrospect it seems hardly worth while to have perused the original papers, since their essential contents are given with greater lucidity in the survey. There is some overlapping and repetition in various sections, but this does not detract from the discussions. The choice of papers is fair and enables the reader to learn the full impact of psychoanalysis on many facets of current research. There is a complete bibliography and a very detailed table of contents and index. The book is a fine work and is highly recommended.

Principles of Psychoanalysis. By Herman Nunberg. Price, \$7.50. Pp. 382. International Universities Press, Inc., 227 W. 13th St., New York 11, 1956.

In 1922 Nunberg published his "Allgemeine Neurosenlehre auf psychoanalytischer Grundlage." In a foreword, Freud stated that it was the most complete and accurate presentation at that time of a psychoanalytic theory of neurotic processes. This book is an English translation of the original German edition some twenty-four years later, with only minor alterations and additions.

The German is admirably translated by Madlyn and Sidney Kahr, the latter a well-known senior analyst. There is an adequate index and an extensive bibliography, not as up-to-date as could be expected. This book is a welcome translation, for, in spite of the fact that little recent material is included, it is still the best available text of psychoanalytic principles. The writing is excellent, making difficult ideas easily understandable. There are many illustrative case vignettes which help elucidate the didactic text. The book is highly recommended for the student of psychiatry and psychoanalysis.

Ministry and Medicine in Human Relations. Edited by Iago Galdston. Price, \$3.50. Pp. 173. International Universities Press, Inc., 227 W. 13th St., New York 11, 1956.

Physicians and ministers of today, in general, are still too remote from each other. There is often little understanding and less sympathy between the two groups. Previous publications have considered the philosophical aspects of religion and medicine, but this volume attempts to unify the two fields within a functional framework.

The book is a summary of two conferences sponsored by the New York Academy of Medicine. Contributors represent many disciplines: medicine, sociology, anthropology, ethics, and theology. The first conferences attempted to define the operational role of the minister and the physician, which in many aspects are strikingly similar. Both groups spent too little time with healthy persons who deserved guidance and support, since ill and disturbed people claimed much of the ministers' and almost all of the physicians' attention. An excellent section described the signs of serious mental pathology to guide the minister in his day-by-day duties.

The theme of the second conference was moralisms and morality. Moralisms were defined as the transient or current regulatory patterns of culture. In this sphere the roles of the minister and the physician could not be well defined. Was the psychiatrist a disinterested and objective observer of individual and group morality and moralisms? Was the minister alone fighting the battle for the Good Life? The conclusions indicated a wide diversity of opinion.

Editor Iago Galdston has compiled an excellent volume. The contributors, all well known, have presented their subjects in a lucid and interesting fashion. The book should hold special interest for students of theology and psychiatry.

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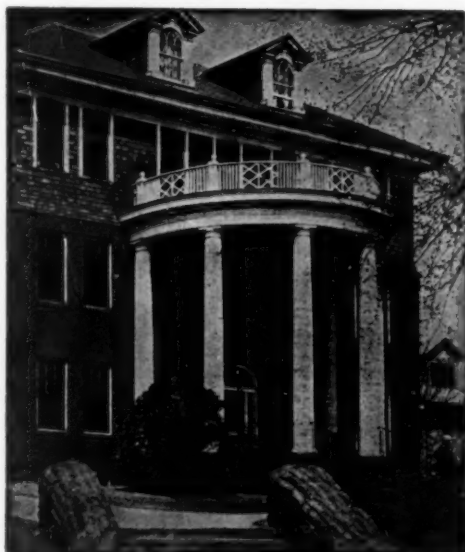
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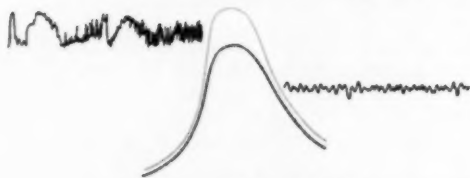
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1. Doyle, P. J., and Livingston, S.: *J. Pediat.* 43:413 (Oct.) 1953.

2. Livingston, S., and Petersen, D.: To be published.

3. Pence, L. M.: *Texas State J. Med.* 50:290 (May) 1954.

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1. Yohe, C.D.: in *Chlorpromazine and Mental Health*, Philadelphia, Lea & Febiger, 1955.

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